

THE
CLIMATE

2

OF THE

ISLAND OF MADEIRA,

OR THE

ERRORS & MISREPRESENTATIONS ON THIS SUBJECT
CONTAINED IN A RECENT WORK ON CLIMATE
BY T. H. BURGESS, M.D.,

CONSIDERED IN

A LETTER

ADDRESSED TO

GEORGE LUND, M.D.


BY

JAMES MACKENZIE BLOXAM, Esq.

LONDON:

T. RICHARDS, 37 GT. QUEEN STREET.

1855.



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ON

THE CLIMATE OF MADEIRA.

[*The reader's attention is directed to the note at the foot of page 4.*]

Funchal, Madeira,
1st June, 1855.

DEAR DR. LUND,

By way of preface to this, my second letter on the same subject, it may be as well to state that my former letter was printed for private circulation, though it was afterwards published; and that, the first impression being nearly disposed of, I take the opportunity thus afforded me to reconsider the subject, and to write this letter as a substitute for the former one.

The object of my former letter, at its commencement, was to discuss the uses, and more especially the abuses of meteorological science, as applied to the practical question of the sanative effects of climate; and I turned to a semi-popular work on climate, written by an English physician,* for the purpose of illustrating my views. In the progress of my task, I discovered that the work in question had far more than ordinary pretensions; that the author had undertaken to correct the misapprehensions,

* Climate of Italy in relation to Pulmonary Consumption, with Remarks on the Influence of Foreign Climates upon Invalids. By T. H. Burgess, M.D., etc. London: 1852.

not only of the public, but of his professional brethren on the subject of *foreign* climates, and to write down what he designates by the appropriate phrase—"foreign depôts" for invalids—a phrase which is suggestive of patriotic motives rather than of charitable consideration for the unhappy individuals who are members of that class, and jars a little unpleasantly upon their, perhaps, too sensitive organs. I discovered also, that the author's method of applying meteorological science in support of his arguments was somewhat peculiar, and I was obliged to wind up my letter by confessing, that the illustrations drawn from this source went far beyond my expectations; and, not having time to revise what I had written, I felt that an apology was due from me, both to Dr. Burgess, the author of the work in question, and to the authors of other works on the same subject, for having, by implication at least, classed them together as authors of the same genus.

At present, my principal object is to examine that part of Dr. Burgess's work which is especially devoted to the climate of Madeira. I do not intend to controvert Dr. Burgess's arguments by means of counter-statements drawn from sources of information other than those he has made use of, but to show that *his own authorities do not warrant either his statements of alleged facts or his conclusions*; or, in plain language, to point out that the author's arguments are *a series of misrepresentations*, and his conclusions *sheer nonsense*. With this view I shall, of course, consider myself at liberty to quote from those authorities any passages that may answer my purpose, without meaning to imply that they correctly represent my own opinions. I must further premise, that I have read only a small portion of the work in question, for it is partly a medical treatise, which I would rather not read; but by degrees I have been induced to examine the Madeira portion of the first chapter, which relates to the nature and properties of this climate, and scarcely touches upon medical subjects.

In discussing an argument, especially one which is not strictly logical, it is usually convenient to begin by stating the conclusion to which it is alleged the premises will lead us. Neither is it unfair to enter into a preliminary examination of the conclusion, by way of getting a little acquainted with its bearings, previously to examining the author's premises in detail ; and I shall adopt this course. Indeed, it has been the course pursued in my own mind, and naturally suggested by first reading in the *Athenæum* for 1853, page 248, and criticising what is there given as the summing up of the author's experience, and which is as follows :—

“ It results from the preceding statements, that much misconception prevails with respect to the efficacy of *foreign* climates in cases of pulmonary consumption ; and, however agreeable to the senses warm air, sunny skies, and luxuriant vegetation may seem, they afford no proof of salubrity, nor of the beneficial effects of any climate. Madeira, with all its sanitary fame, is no exception to this rule, as the meteorological observations of Drs. Heineken, Gourlay, and Mason incontestably establish. Malta....”

In the name of common sense let me ask, how can the meteorological observations referred to incontestably establish any such fact as that which is asserted in the above paragraph ? Do the numerical readings of the barometer, hygrometer, etc., or the points of the compass to which the wind-vane happens to point, afford proof of salubrity, or of the *beneficial effects* of climate, any better than what is agreeable to the senses ? Taking this as a specimen, and without looking at the author's preceding statements, I can easily believe that much misconception prevails *somewhere* ; for it seems that, because we are told that the thermometer and hygrometer of the above-named observers gave certain numerical results, we must take it as a fact *incontestably* proved, that the climate of Madeira has not and never had that effect upon invalids, which both the public and the medical profession attribute to it. And, strange to say, in order to arrive at this incontestable con-

clusion, we must read those cabalistic numbers according to the interpretation given to them by Dr. Burgess ; for no one else, not even the three meteorological observers themselves, who, be it remembered, were members of the medical profession, were able to discover that they conveyed any such meaning, and each of them has expressed opinions directly opposed to Dr. Burgess's *incontestable* conclusion, as I shall fully show by means of the following quotations from the three authors named.* Since the passages which I shall give were not designed for my use, I shall underline some words which, in the originals, are not printed in italics.

Dr. Gourlay writes as follows :—†

“ The salubrity of the climate in this island, so highly extolled, is greatly (generally?) attributed to the *uniformity of its temperature*. A regular suecession of land and sea-breezes cool and purify its atmosphere during the the whole year, and especially during the hottest months. Hence, *a drop of dew seldom falls*, except in the higher parts of the island ; and any deleterious effluvia, which may arise from the surface of the earth, or from other sourees, are dissipated as soon as they are produced.” p. 31.

“ During the day, the whole range of the thermometer will seldom, at any season, exceed two, or at most four degrees, and frequently, for several days together, the same degree of heat is indicated.” p. 32.

“ Where such uniformity of temperature exists, combined with purity of atmosphere, and where such a pleasing variety marks the climate, one would conceive that

* The reader who may feel unwilling to read the whole of this letter, is advised to proceed at once to page 23. The intermediate portion contains the opinions above alluded to, an examination of the value of the meteorological data furnished by the abovenamed authors, and some remarks on medico-meteorology, both general and with reference to Madeira in particular.

† Observations on the Natural History, Climate, and Diseases of Madeira, during a period of Eighteen Years. By William Gourlay, M.D., Fellow of the Royal College of Physicians, Edinburgh ; and Physician to the British Factory at Madeira. London : 1811.

the inconveniences of seasons would be unknown ; and that neither the excessive heats of summer would molest, nor the colds of winter pinch, the frame ; but it is found that this pleasing picture is not *entirely* realized ; and though it may be truly said that, in general, spring and autumn compose the whole year, yet it is not to be concealed that, during the months of *July, August, and September*, which are the hottest months, the heat becomes excessive and intolerable ; and that, on one or two occasions, the winter has been distinguished by a severe storm. Still, however, the winter may be said to be known only, perhaps, by a gale of wind, which may drive the vessels in the roads from their anchorage, or by a torrent of rain, which produces a rapid flow of the rivers down the ravines." p. 33. It should be observed, that July, August, and September, are not included in the Madeira season, that few English invalids remain in the island during those months, and that those few usually remove to higher and cooler residences during the heat of the summer.

"The preceding observations on the climate of Madeira, have been drawn up from an accurate account kept of the weather, for a period of no less than sixteen years." p. 39.

"Madeira, from its *uniformity of temperature*, and purity of atmosphere, has long been, and still continues to be, the favourite retreat of consumptive patients from the northern parts of Europe. Here, the unhappy sufferers under this formidable disease, *cheat the winter of their own climate*, and gain that cessation of suffering which such a situation is fitted to produce." p. 90.

After describing the class of patients then usually ordered to Madeira, "Before such patients repair to this *last haven* of health, their malady is unfortunately, in too many cases, in its last stage ; when neither change of climate, nor any remedy whatever, can be of service. From what cause this backwardness to an earlier trial of a southern climate proceeds, is not for me to determine ; but it would be well if the physicians of such patients were to recommend a change of temperature in the first stage of the malady, where, etc." p. 92.

Dr. Heineken's *meteorological* paper contains no remarks whatever respecting the *salubrity* of this climate ; unless a statement, that he never heard that any ill effects have been produced by the leste, may be considered to bear on that point. Consequently, we must conclude that, when Dr. Burgess states Dr. Heineken's *opinions* on that subject, he refers to the opinions which Dr. Heineken has expressed in his two other papers, both of which are mentioned in Sir James Clark's work on climate, so that Dr. Burgess could not be ignorant of the existence of either of them. I shall make some extracts from each of Dr. Heineken's papers, taking them in the order of their dates.

"That the climate of Madeira is the best certainly within this hemisphere, I take for granted ; but I am *more than doubtful* as to the *season* which is most beneficial in pulmonary disease."*

The three next paragraphs are extracted from a letter, dated November, 1826, written by Dr. Heineken, and published in the appendix to Mr. Lyall's work.†

"Dr. Price estimated the expectation of a child at birth, in London, to be nineteen years of life, and Dr. T. Herberden, in Madeira, thirty-nine years. Without, however, stopping to inquire into the accuracy of these estimates, or the probable causes for their very great disproportion, allowing them to be correct ; it is certainly true, that Madeira is remarkably healthy : from most of the diseases peculiar to warm climates, it is exempt ; and many of those which in more northern latitudes, from the frequency of their occurrence, and epidemic or endemic characters,

* The London Medical Repository. Vol. ii. London: 1824.—Of Madeira, its Visitors, its Climate, and its Diseases. By C. Heineken, M.D. The above quotation is merely intended to show that Dr. Heineken's opinion of the climate of Madeira was favourable and not condemnatory, as Dr. Burgess's statement would lead his readers to conclude. I could not, by means of quotations, give a fair statement of Dr. Heineken's estimate of this climate, as expressed in this paper, without copying nearly all that he has written ; and I should not be willing to do so without adding my own remarks.

† Rambles in Madeira and in Portugal. Anon. London: 1827.

become a scourge, are here either altogether unknown or but slightly felt." p. 334.

"I shall take for granted, that my medical brethren in England will only advise those who are likely to benefit by climate to quit their native shores; and with this proviso, I do not hesitate to say, that Madeira holds out advantages that are not to be met with combined in any other quarter of the globe." p. 337.

"The temperature of Madeira is more equable (contrasting day with night, and summer with winter) than that of any other place. Our rains are violent, almost tropical; but they are also periodical and circumscribed, and never lingering and teasing. We are entirely free from the piercing keen winds which are met with, more or less, all over the continent of Europe, and enjoy, throughout almost the whole summer, although more partially than between the tropics, 'the trades' and land and sea-breezes which there prevail." p. 339.

The three next paragraphs are extracted from Dr. Heineken's paper, entitled "Meteorological Register kept at Funchal, in Madeira, in the year 1826; with some Prefatory Observations on the Climate of that Island," &c., published in the *Philosophical Magazine*.*

"The periods of the day at which the observations have been made, are not those which I should have selected, had a free choice been offered me, but all others were precluded, either by the state of my health, or the nature of my avocations. I selected, therefore, *the least eligible*, because they were likely to prove the least interrupted. As regards the barometer the results have not, I think, been greatly influenced by this circumstance; its oscillations during the four-and-twenty hours being comparatively, and upon an average, so trifling; but the deductions from the *hygrometer* are, I fear, of *but little value*; one observation of this instrument during the day, is *obviously inadequate*, and I have not, therefore, attempted to form a mean from it." p. 362.

† The Philosophical Magazine and Annals of Philosophy. Nos. 11 and 12. November and December 1827. London.

“At the level of the city no perceptible dew is produced; but up the mountains it is profuse, and all meteorological observations are here circumscribed to a degree which is unknown in an extensive and tolerably plain country.” (The marks of emphasis in the remainder of this paragraph are copied from the original.) “Tables for Funchal belong to *that locality only*, and *cannot* in any way be made to suit the *island generally*; and until a *series* of observations shall be made at *different heights*, and in *different aspects*, it is *mere deception* to apply *any deductions* to *Madeira as a whole*. At the moment I am writing” (31 Dec., 1826), “the sun is shining, and in these lower regions the day is lovely; sea-ward the atmosphere is cloudless, and there is more need of a parasol than an umbrella: but I have only to look out from a north window, to see it raining in torrents upon the summits of the mountains.” p. 364.

Dr. Mason's personal knowledge of Madeira was obtained during a residence of less than two years. His meteorological observations were made principally at his own house in the parish of Sta. Luzia, on the north side of the city of Funchal. They extend over a period of one year only, namely, from March 1834, to February 1835, both included. The following remarks are taken from his work:—*

“The observations made at Sta. Luzia apply to that locality alone, and cannot in any way be made to suit the island generally; nor will they give precise information relative to the lower part of Funchal, near the sea, especially as regards the progress of humidity during the day, although in point of temperature, they may be very near the truth. . . . I may also remark that almost every locality offers something peculiar alike with regard to temperature, humidity, or the local winds which prevail; and that until a series of observations shall have been made in different localities, the full merits of the climate, as regards

* A Treatise on the Climate and Meteorology of Madeira. By the late J. A. Mason, M.D.; edited by James Sheridan Knowles. London: 1850.

the suitability to different diseases, or even stages of the same disease, will never be fully ascertained," etc. p. 37. On the same page he states that invalids generally reside above the town, in the same line in which his observations were made. This may have been the case some twenty years ago, when Dr. Mason wrote, but it is very different now.

"According to Dr. Heincken's account, the gold-leafed electrometer is very slightly acted upon. This is a most important subject, as regards the influence of climate upon the system. It is one, the thorough investigation of which appears to be a desideratum in the science of meteorology; and, nevertheless, no one seems to have taken it up with the energy it deserves. *Hence, we are at a loss for precise data, to determine the effect which the atmosphere is calculated to produce upon the human frame.*" p. 52.

"From this statement" (a long one, which it is unnecessary to quote), "we can account for the fact that patients who visit Madeira, are so differently affected by the precisely same conditions of the atmosphere; some experiencing relief, and others only an aggravation of their complaint. Accordingly, the present work will be regarded, *not as an attempt to prejudice that island as a resort for invalids*, but as an effort to point out the danger of an *indiscriminate* reliance upon the sanitary effects of climate. Such a reliance is injurious. The not unfrequently frustrated hopes of anxious friends, suggest advantages, real or imaginary, from a resort to other localities; whereas the atmospheric phenomena of Madeira being ascertained, and the requirements of the patients found to correspond therewith, comparative uniformity of success would establish its reputation; and the failure of cases to which its climate is not adapted, would not be attended with the effects of damaging its character as a residence for those who, by a change to such a locality, *might reasonably calculate upon the realization of their most sanguine expectations.*" p. 133.

"Those who, on their arrival, find the climate agrees with them, had better immediately remove to a drier

climate ; while those with whom it materially disagrees, as indicated by the symptoms which I have described, *may rest assured that they will derive permanent benefit from remaining, that their hopes will not be blighted, but that returning health and strength will result from leaving for a season their own less hospitable climate.*" p. 152.

Writing on the climate of London : " In its effects on the animal economy our summer season will approach to the Madeira climate, being slightly modified by temperature and hygrometric condition."* p. 162.

Notwithstanding these opinions of Drs. Heineken, Gourlay, and Mason, it is now clearly ascertained, as we are informed by Dr. Burgess, that their own *meteorological observations* incontestably prove that the sanitary fame of Madeira is a pure delusion. The hieroglyphics which those gentlemen merely placed upon record have now been deciphered, and their meaning admits of no further dispute ! And Dr. Burgess does not hesitate to do that which one of his three selected authorities has pronounced with emphasis to be *mere deception*, and which another corroborates, namely, to apply a few local deductions to the island generally !

Dr. Mason's meteorological tables are so elaborate, that it is difficult to believe that the requisite observations were really made by one individual, who, we are told, never, for a moment, deputed the task to any other person (Preface, p. viii). At page 184, we have a table, professing to show when any part of the *day* or *night* was fine, cloudy, or variable, and when any rain fell in each month ; with the number of *hours* actually fine, cloudy, or rainy, during the same periods ; also the number of days during which thunder occurred. This table extends over a whole year. At page 191 we find a table involving daily hygrometric observations, at the following hours,

* This statement is contradictory to another on a preceding page ; but the first statement is inconsistent with the whole tenor of Dr. Mason's work. I shall allude to it again by and bye.

namely, 6 A.M., 9 A.M., noon, 3 P.M., 6 P.M., and 9 P.M., besides observations at different hours in the night, which are not specified. There are blanks in the table for three months, at 6 A.M.

I have learnt from what I consider sufficiently good authority, that, during his residence in the island, Dr. Mason was several times absent from Santa Luzia cottage, for many days, if not weeks at a time. Indeed, he writes of having been at Santa Cruz. How his meteorological register was kept during those intervals, or by what process of calculation the blanks were filled up, we are not informed. We are only told, that he never for a moment deputed the task to any other person.

At page 1, he tells us that the height of Santa Luzia cottage, the place at which he made his observations, is 350 feet above the level of the sea; and at pages 82 and 83, it is stated at 300 feet. Having taken some pains to measure the height of my own house, which is only a few yards distant from Dr. Mason's house, I can state that the latter is less than 250 feet above the level of the sea, and not 350, or even 300 feet.

At page 2, he says, "the register-thermometer, for external temperature *in the shade*, was fixed in the garden four inches from a stone pillar, one foot square, with a room above it—the pillar being one of the supports of the floor—free from currents of air, and reflected light, *though exposed to radiant heat, and receiving the sun's rays obliquely, from 2 p.m., to 5 p.m.*; the thermometer obtaining its maximum from half-past 2 to 3 P.M.—aspect N. W. by compass." Exactly what is meant by the *oblique* rays of the sun, in this latitude, from 2 to 5 P.M.; and, of course, all the year round, I do not quite understand. It is easy to imagine that the thermometer so situated would attain its maximum at the time specified; but, being then exposed to the influence of the sun, it could not indicate the temperature in the shade.

At page 3, he tells us that the direction of the wind was determined by a vane, placed upon a high staff. It is true

that the staff, which still remains, is nearly 8 yards long; but it stands so much below the level of my house, and other buildings in its immediate vicinity, that I can only regard it as a useless toy. Even if the buildings were removed, the vane could be expected to indicate only the direction of the current of air in that part of the valley, and would be quite useless for general purposes. I confess I am at a loss to point out any systematic method of registering the direction of the wind, in this mountainous country, which would be at all satisfactory; but I consider Dr. Mason's register of his own wind-vane as mere waste paper. One might as well register the flickerings of a candle in a room.

A more important question is, the value of Dr. Mason's hygrometrical observations. Santa Luzia cottage is a very small house. The room in which the hygrometer was placed, opens towards the garden, which is much confined by high walls, especially near to the house. The room is supported upon stone pillars, with an open area under it, and for a little space in front of it; the garden being two or three feet above the level of the area. Close to, and nearly on a level with the room in question, is an open water-tank, the vent of which leads into the area. The leakage and waste water would naturally keep the area constantly damp, and, when I saw it, such was the case. An open watercourse, called here a *levada*, runs across the garden at the distance of a few feet from the windows of the room in question, and quite close to the area, in fact, upon the low wall which forms the limit to the area on the garden side; and this *levada*, being two or three feet higher than the area, would tend to increase its dampness, both by surface-evaporation and by filtration. The garden, I am told, was in a state of luxuriant vegetation, and grew, amongst other things, bananas. When I visited the room, I immediately perceived a damp, mouldy smell, which I presume arose from the area and tank, under and in front of it. The following is what Dr. Mason himself says with respect to the tank. After

speaking of the tanks kept to irrigate gardens, "I feel fully justified in attributing to those sources the effect of poisoning the air; as I suffered severely in my own person all the symptoms generally referred to the effects of marsh effluvia—such as extreme lassitude, pains in the head and limbs, intolerance of light, mental depression and anxiety, dry, parched, brown tongue, etc.—all which disappeared in three days, without the aid of medicine, upon removing to Santa Cruz, a few miles from Funchal. On my return to Santa Luzia, the same symptoms reappeared after a residence of a few days, and continued, unabated, till this source of annoyance was partly removed, when some amelioration of the symptoms took place. I have not the least doubt that they would have disappeared completely, could the stagnant water have been entirely got rid of; but, although my landlord had lived some years in England, I had much trouble to convince him that water could be at all offensive, after being kept two months in a tank." p. 40.

From the latter part of this quotation it seems probable that, during a portion of Dr. Mason's residence, the tank was in a worse state than it is at present; and this is somewhat confirmed by the description which the late Mr. Wilkinson gave me of it; since his description is barely justified by the present state of the tank. Mr. Wilkinson also told me that he frequently remonstrated with Dr. Mason on the absurdity of placing his hygrometer in such a situation as the one he had chosen. On this point, however, Dr. Mason says (page 3), "The hygrometer was situated in a room to the west, between two windows constantly open from 6 A. M. to 6 P. M., and very free from currents of air, as they acted like folding doors. This room was, consequently, free from local humidity arising from the evaporation of water from the ground, etc." Can anything be more absurd than to suppose open windows, acting like folding doors, would exclude local humidity? What can be the value of hygrometrical observations with reference to the general climate

of Madeira, which were dependent upon such means of excluding peculiar local influences?

At page 6, Dr. Mason says, "There is a striking coincidence in the results afforded by Dr. Heineken's observations [made eight years before those of Dr. Mason] and my own, although the instruments by means of which they were obtained are so widely different; proving that when such observations are based on facts, instruments, however varied in their constructions, must offer, upon comparison, results which accord with one another; because nature is uniform in her operations; whence the same causes invariably produce the same effects." At page 203, the editor presents us with a comparison of Dr. Mason's and Mr. McEwen's observations made with similar instruments in the same months of different years, the latter giving upon an average somewhat more than double the degree of dryness stated by the former, and accompanied by the following remarks:—"The difference of locality, or the circumstance of his (Dr. Mason's) observations having been made in the house, with open windows, and mine (Mr. McEwen's) out of doors, does not sufficiently explain the discrepancy, which I think fully proves—what Dr. Mason suspected—that the different years vary much more than is generally admitted." How very consistent are these two proofs! It may be as well to remark also that the results given by Dr. Mason, with respect to the mean annual dryness on the dew-point hygrometer (to use his own expression), at nearly the same hours of the day, are as follows:—Dr. Mason's, $7^{\circ}.42$ —Dr. Heineken's, $7^{\circ}.42$ —a very striking coincidence certainly, since there is not a difference of even one-hundredth part of a degree. However, Dr. Mason's own result does not include the periods of lasses. The mean of Dr. Heineken's observations for the year is $7^{\circ}.70$, including lasses; and from this Dr. Mason appears to have made a perfectly arbitrary deduction on account of the lasses; that is to say, he appears to have deducted the five driest out of thirteen, marked as sirocco or partial

sirocco days by Dr. Heineken, without any apparent reason, unless it be to produce this striking coincidence. But that is a mere trifle compared with the following. Since Dr. Mason did not use the dew-point hygrometer, his result, when referred to the dew-point, necessarily depends upon the method of reduction which he employed. Now Dr. Mason employed a constant factor of reduction without regard to the temperature of the air, which cannot be correct for all temperatures; but if we employ Mr. Glaisher's factor (taking the mean temperature of the air between 65° and 70° , since Dr. Mason states it to be 68°) the results will stand thus—Dr. Mason's, $5^{\circ}.41$ —Dr. Heineken's, $7^{\circ}.42$ —the latter being 37 per cent. greater than the former. I have already pointed out, in the comparison of Dr. Mason's and Mr. McEwen's results, obtained with similar instruments, that the last is 100 per cent. greater than the first. Whether the facts on which these several results are based are erroneous, or whether nature has deviated from the ordinary uniformity of her operations, are questions which I shall leave for future investigation.

Admitting that Dr. Mason's meteorological observations are entitled to more credit than I give to them; yet, in a paragraph which I have already quoted, we have his own statement that his results cannot in any way be made to apply to the island generally, and that, until a series of observations shall have been made in other localities, the merits of its climate can never be fully known.

The principal point in dispute respecting the climate of Madeira is, whether it is dry or damp. Persons who judge of it by the test of their own feelings, use such expressions as the following: "The air is soft and delicious, and strikes with a peculiar charm the stranger, whom, perhaps, a few days have transferred from the gloom and chill of an English winter." "The dry and balmy air which produces this never-ending spring, makes the step buoyant, and raises the hopes of the sufferer, who a few days before left the choking fogs, the rains and chilly

damps, of the 'Thames and the Medway.'" Dr. Mason, however (page 33), says, "It would be a difficult task to convince many of the residents that the climate is at all damp, although the facts admit of being proved in the most satisfactory and philosophical manner." Let us admit, for the present, that Dr. Mason has proved in the most satisfactory and philosophical manner that the air of Madeira is very damp, that is to say, damp in philosophical language; and let us suppose also, for the present, that in philosophical language a damp air is one that contains a more than average quantity of moisture, the measure being the number of grains of water in a cubic foot of air; for this, as I understand, is the manner of estimating the dampness of a climate to which Dr. Mason alludes. Are we to infer from these admissions, that persons who describe the climate, manifestly with reference to its effects upon the sensations, are labouring under a pure delusion? Is it not obvious, on the contrary, that the sensation of dampness depends upon something besides the number of grains of water in a cubic foot of air, and that Dr. Mason's satisfactory manner of estimating dampness fails to detect that not unimportant something, whatever it may be? Philosophers, in their arguments with the unlearned, frequently contrive to beg the question. So, in the present case, Dr. Mason (or his predecessors, it is immaterial which) first appropriates the words dampness and dryness, and, by implication, defines their meanings to be in accordance with his method of estimating those qualities. Then, secondly, he has no difficulty in proving the ignorance and obstinacy of all who persist in calling the air damp or dry, according to the original but less definite application of those words. And, thirdly, he absolutely ignores those differences in the state of the air which are not indicated by his method of estimating it. Nevertheless, I do not believe it has ever been ascertained, nor does Dr. Mason assert, that dampness, as measured by his method, furnishes a truer criterion than our own sensations do, of the *suitability* of a climate for

animal life. His method has the advantage of being a definite and philosophical measure of something; whilst the other is vague and uncertain. But the philosopher has no right to rest satisfied with his method. There are other qualities of air, of which we have sufficient evidence; and it is his business to discover, define, and estimate them. It is most unphilosophical simply to ignore those other qualities, because they cannot, as yet, be defined or measured by any known instrument. Such distinctions as those to which I have just alluded would enter into theoretical speculations, but would be of little practical importance, at present, if medico-meteorologists would always be content to deal fairly with the question. Dr. Mason tells us that his method of estimating dampness gives materially different, nay, contradictory results, when compared with non-instrumental estimates; but he does not fall into the error of appropriating to a damp climate, as estimated by his method, all the ill effects which either experience or prejudice has attributed to dampness, as tested by the other means. For this latter step we are indebted to other persons, who raise the cry of vapour, moisture, luxuriant vegetation, dampness, etc., etc., in the ears of persons who are affected by a species of hydrophobia; then appeal to Dr. Mason and other authorities, for certain facts which answer the intended purpose, and carefully suppress the opinions of those same authorities, as to the value of those facts and the inferences to be drawn from them. Thus, though Dr. Mason insists much upon the humidity of the air of Madeira as proved by experiment in opposition to popular opinions; yet he by no means attributes to it a *generally* prejudicial effect. On the contrary, he writes as follows:—"With regard to individuals who labour under certain diseases, which would be aggravated by a considerable evaporation from the surface of the lungs or skin, *we see the propriety of a change to a warm and humid climate like Madeira*, where pulmonary evaporation would be impeded; as such individuals always suffer from the cold of our winter,

which, in their cases, produces the same effects as excessively dry air. It is proved that large quantities of fluid received into the stomach, will not remedy the effects of that rapid exhalation from the lungs, which is produced by air, either cold, or excessively dry. Thus, of necessity, a mild humid air will place the patient under those circumstances which are most favourable to his recovery. It will be also necessary to place the patient in a temperate atmosphere; for if that condition be neglected, it is obvious that although the air be saturated, nevertheless, if it be *cold*, it will not produce the desired effect; as with regard to pulmonary exhalation, it will operate in precisely the same manner as dry air. On the contrary, if the conditions of the system are the reverse,” (p. 130). I do not admit that this climate is so humid as Dr. Mason describes it; and with respect to the validity of his reasoning, that is out of my province. My object is to show that neither his meteorological observations, nor his personal experience of the climate, induced him to entertain an unfavourable opinion of its sanitary effects.

Dr. Mason tells us (page 18) that the mean temperatures of the air of London and of Madeira are about 50° and 68° respectively, and consequently that, when saturated, the air of the latter contains twice as much moisture as the air of the former. Another inference, which we are equally at liberty to draw, is that the air of London, when absolutely saturated with moisture, is as dry as the air of Madeira when in a state of only half-saturation. Now, people of ordinary understanding would certainly call the former excessively damp, and the latter excessively dry. Nevertheless, we must bow to our medical philosopher (not Dr. Mason, but another of more recent date), and not merely admit that, in such a case, there would be equal quantities of water in the air of both climates, but also that, so far as regards animal life in general, and all diseases in particular, which are usually considered to be much affected by dryness or dampness, the two climates are to be considered as on a par—that

the air of London, when in a state of absolute saturation, is on a par with the air of Madeira in a state of half-saturation ! Surely, this must be quite conclusive against the climate of Madeira, especially when we remember that a state of half-saturation corresponds to a depression of the dew-point equal to about 18° , whilst Dr. Mason allows us (see p. 26 and table xxxii) a mean annual depression of 7° at most. There is, however, another way of estimating the dryness or dampness of air, which is equally well known to the ordinary meteorologist ; and I would submit to your judgment whether it ought to be absolutely discarded in medico-meteorology. At moderate elevations, the air, whether in England or in Madeira, seldom is absolutely saturated with moisture. Consequently, if we understand the comparison between the air of those two places when in that state to mean nothing more than the words literally express, the fact is of no great value. Perhaps we are intended to understand that, as a general rule, the air of Madeira would be twice as damp as the air of London. But, under the point of saturation, if the air of Madeira contains just twice as much moisture as the air of London, the former may still be considered, in another sense, twice as dry as the latter ; that is to say, it is capable of absorbing twice as much *additional* moisture. Consequently, there are two methods of comparing climates : one of which might enable us to pronounce that climate A is twice as damp as climate B ; whilst the other enables us to state just the reverse ; and either would admit of being proved in a “ most satisfactory and philosophical manner.” Such of our medical men as may wish to prove that the climate of Madeira is a mere delusion, and to advise their patients indiscriminately to remain in England, may adopt the former method ; but they may perhaps find it convenient to be provided with the other, in case the question should be, a choice of residence in England or in the polar regions, where, undoubtedly, the air contains a very small quantity of moisture ; since, if we take the average tempera-

ture of an extreme northern climate as high as 10° F., it will contain only one-fourth part as much moisture as the air of London, both being saturated.

The observation which I have quoted at the beginning of the preceeding paragraph, is a casual remark of Dr. Mason, to which he attaches no more importance than it deserves: and, consequently, I should not have thought that it required to be noticed, if I had not seen that it is misused by the manner in which it is quoted, misquoted, and re-quoted elsewhere.

I fully admit, as a general rule, that the warmer the climate the greater is the quantity of aqueous vapour contained in a cubic foot of air. Is there any reason for doubting that this is a beneficial provision of nature? In any given climate of limited extent, a particular spot which is more than ordinarily damp, as measured by the proportion of aqueous vapour to common air, is usually found to be unhealthy. But if we attempt to compare places situated in very different latitudes by the same rule, it leads to results which are so preposterous that the method of comparison is obviously inapplicable. I do not believe the quantity of *pure* aqueous vapour in the air is a matter of nearly so much importance as it is generally supposed to be; but, that many injurious effects upon the human system, which are attributed to dampness, depend, if not entirely, at least in great measure, upon other elements. It may be that *moisture* causes those other elements to be developed, or that *aqueous vapour* acts as their vehicle. It may be that the same causes often produce both dampness and those other elements. On either of those suppositions dampness might be mistaken for the cause of the effects observed, especially when we have no precise means of detecting any other cause to which they can be attributed; and I cannot help thinking that such mistakes are frequently made. Can it be contended that the air of a close, dark, damp cellar is no more injurious to human health than equally damp air rendered so by fresh steam from a tea-kettle, or other

similar means? We know that over marshes miasmata sometimes exist to such an extent as to depopulate large districts, whilst a sea-air, more than equally damp, is considered conducive to health; yet no one doubts that the miasmata are caused by the moisture of the marshes. Though the existence of miasmata in marshy localities is fully recognised, their presence cannot be detected by any meteorological instrument, or even by chemical analysis of the air; and consequently it is easy to believe that we cannot form correct estimates of the salubrity of air by any instrumental or even chemical investigation of its qualities. I feel a strong conviction that many effects which are attributed to aqueous vapour alone, are, in fact, produced by other constituents, which frequently, but by no means necessarily, accompany it; and that whether aqueous vapour is or is not accompanied by those constituents, depends upon the source from whence it is derived; perhaps somewhat in the same manner as water acquires different qualities by filtration through different mineral strata; and that it is as great a mistake to attribute those effects to the aqueous vapour, as it would be to attribute the peculiar effects of different mineral waters to the one constituent water. A slight excess of aqueous vapour, if it happens to be derived from a poisoned source, may be a matter of great importance; and within a limited district, a slight excess of aqueous vapour at a particular spot, often does arise from such a source; and, in other cases, it is an indication of want of free circulation of the air, and consequently of an undue accumulation of noxious vapours. But no such inferences can be drawn from comparisons of the quantities of aqueous vapour in the air of places at great distances from each other; in which case the difference in the quantities of aqueous vapour is likely to be dependent upon more extensive and essentially different causes.

I do not mean to assert that aqueous vapour is an unimportant element in medico-meteorology; but, until the many other elements which enter into the question can

be more certainly detected, and their effects eliminated, I think that hygrometry will be of very limited practical use. It must not be forgotten that there are many recognized meteors, such as electricity, ozone, and various gases, which can be estimated, though with more or less difficulty, the effects of which upon the human system may be considerable, and that as yet very little is known about them. What Dr. Prout says in the appendix to the *second edition* of the eighth number of the *Bridgewater Treatises*, appears to me to deserve the attention of medico-meteorologists. I refer to his suggestions respecting the opposite effects of pure aqueous vapour, and of aqueous vapour in union with oxygen or deut-oxide of hydrogen; the affinity being apparently so slight, that this combination occurs only when the oxygen in the atmosphere exceeds the chemical equivalent, 1 of oxygen to 4 of hydrogen; and that the results of every *common* analysis and examination of air are the same nearly as if such a state of combination did not exist.

The lestes of Madeira are sometimes made great bugbears. We may judge of Dr. Mason's opinion of their *importance* to invalids, by the passage which I have already quoted, in which he advises those persons with whom the leste materially *dis-agrees*, to *remain* in the island. With respect to his advice that those who, *on their arrival*, find the leste agrees with them, had better *immediately* remove to a drier climate, I have to remark, that the season here is considered to begin on the 1st October, and to end on the 31st May. Now I arrived in the middle of September 1850, and it was not until some time in the following June that I had an opportunity of judging of the effects of a leste; and my experience of lestes during the four succeeding *seasons* has not been much greater. The precise and strong symptoms which Dr. Mason describes as distinguishing these winds, may occur sometimes, for anything that I know to the contrary; but most assuredly not always. It is not unfrequently a matter for doubt and difference of opinion,

whether or not there is a leste ; and the strong symptoms which Dr. Mason describes, I have never witnessed or heard of, though I have resided in the island ever since my first arrival in 1850 ; with the exeption of a little more than three months in the summer of 1854.

I shall now proceed to examine the evidence upon which Dr. Burgess's conclusions respecting the climate of Madeira profess to be virtually founded. In order that I may do it justiee, I shall transcribe this portion of the work *verbatim et literatim* ; and though I shall separate the sentences for the purpose of inserting my own remarks, yet their connexion will be sufficiently obvious to the eye ; and I would suggest to my readers that they should first peruse Dr. Burgess' statements continuously. I shall take the liberty of emphasizing the passages which I may have oecasion to quote from any authors execept Dr. Burgess.

“ Although several of the subsequent statements may be opposed to various popular notions prevalent in England, no opinion has been hazarded without the support of positive data : consequently, readers can judge whether the conclusions I have enunciated are fully warranted by the evidence upon which they are virtually founded.”

The above is the last paragraph of the preface to Dr. Burgess's work, and deserves to be well noted. The following are taken from the body of the work, beginning at page 10 :—

CLIMATE OF MADEIRA.

“ Madeira, one of the ‘ islands of the blessed,’ which Herodotus described as situated on the confines of the earth, in an ocean warmed by the rays of the near setting sun, is now, perhaps, the most frequented of all the foreign depôts for pulmonary consumption, not exepecting the Nile.”

In the eourse of my limited examination of Dr. Burgess's work, I have not met with an instance of a borrowed

quotation which he has not appropriated to himself, by stating it as if it were his own, and making no acknowledgment of the source from which it was obtained. Thus Dr. Burgess begins the subject of the climate of Madeira with a quotation, or rather with a mis-quotation, not of Herodotus, as his readers might be led to suppose; but, apparently, from White's *Madeira*,* a work to which Dr. Burgess alludes three lines further on, and on the first page of which we are told that, Herodotus "*mentions* the 'Islands of the Blessed,' situated on the confines of the earth, in an ocean warmed by the rays of the near-setting sun." Mr. White, however, prudently leaves it to those who have a taste for romance, and possess the power of drawing largely upon their own imaginations, to supply the link which is wanting, in order to connect this description with the island of Madeira. I must not be understood as attributing the latter part of the above sentence to Mr. White.

"Opinion is divided as to the sanative effects of the climate of this island in tubercular phthisis."

Opinion is divided on this subject. We have on one side of the question, the opinion of Dr. Burgess, *who never visited the island*; and, on the other side, the opinions of all the authors, without exception, whom he has quoted, *all of whom had resided in this island*, and from whom, it is fair to presume, he has drawn the greater part, if not the whole of his information respecting it; for though there are discrepancies in the opinions of these several authors on some points, yet, they all range themselves on the same side of the one main question. And Dr. Burgess himself tells us, a little further on, that Madeira is pretty generally regarded, in England, both by the profession and the public, as the climate, *par excellence*, for promoting the cure of pulmonary consumption. This being the division of opinion which exists on the subject in question, we have now to examine the "positive data,"

* *Madeira, its Climate and Scenery*. By Robert White. London: 1851.

upon which Dr Burgess professes to have founded his own conclusions.

“Mr. White, a recent non-medical writer on the subject, is enthusiastic in his praises of the climate, and evidently grateful for the blessing of restored health, which he attributes entirely to a sojourn at Madeira. He remarks—‘Without advancing any pretensions to medical knowledge, or the physiological effects of climate, a residence of many years in Madeira, and a lengthened sojourn, in pursuit of health, among the most favoured localities of the south of Europe, enable the writer to add his testimony to the decided superiority of the climate of Madeira over all those he has visited. Cold winds, or close sultry weather, are little known, and a continuous summer may be enjoyed without suffering from extreme heat or cold, or a continuance of damp or wet weather.’”

Even though we supply the ten words of praise omitted from the *middle* of this quotation (see White, p. 11,) I am unable to discover anything to justify the application of the word “enthusiastic” to Mr. White’s calm statement of the result of his own long experience.

“He also observes—‘The most remarkable feature of the island is, probably, the mildness and *equability* of its climate, and its consequently beneficial effects in pulmonary and other complaints.’ Notwithstanding this eulogium, the writer has some misgivings as to the perfection of the climate, and reluctantly admits that, although so *very equable*, the climate of Madeira is not altogether free from changes, which constitute there, as well as elsewhere, the exciting causes of pulmonary affections.”

This is true, only with a qualification which Dr. Burgess thinks proper to omit; for the next sentence in the same paragraph of Mr. White’s work is as follows:—“These, however, as may be supposed, are comparatively rare among the better classes, and occur chiefly among

the hard-working poor, who are more exposed to this cause, and to sudden chills of the surface while perspiring profusely." p. 93. Why did Dr. Burgess omit this sentence? Does he think that he is justified in qualifying Mr. White's statements, on the ground that he is enthusiastic in his praises and reluctant in his admissions?

"‘Pulmonary consumption and scrofula occur among the natives of Madeira,’ he observes, ‘but less frequently than among the natives of more changeable climates.’"

This is not a literally correct quotation, but the variation is not material.

"Yet, in this almost perfect climate, the same writer informs us, that the different eddies or currents caused by the vicinity of the mountains, render either a vane or anemometer of little use;"

Mr. White writes thus—"From the position of the basin of Funchal, *open only towards the south*, it is difficult to ascertain the true course of the winds; and the different eddies or currents caused by the vicinity of the mountains render either a vane or anemometer of little use," and four lines further on, "during the continuance of north and north-east winds, a gentle westerly breeze or back current usually blows into the bay of Funchal." p. 86. Verily the climate of the *whole island* is condemned, and the blessing bestowed upon it by Herodotus must go for nothing, since Mr. White has admitted, amongst other things equally important, that it is *useless to register* the direction and force of mere eddies or currents of air *within the basin of Funchal*, which is open only on one side, or of the gentle westerly breeze or back current which blows into the bay when the prevailing wind is in another direction! Dr. Heineken tells us that he does "not pretend to great accuracy as to the precise points of the compass from which the winds have blown: upon a mountainous speck in the ocean, such as this, the only method of judging is to look to sea with a glass, for all

indications on shore or in the bay serve only to deceive." p. 365. Dr. Mason tells us—"I have not attempted to give any account of the general winds—that being almost impossible, for all indications on shore or in the bay serve only to deceive. With regard to the direction of the clouds, a like uncertainty is experienced; for I have frequently seen three different currents, while the vane indicated a fourth." p. 43. And in the same volume we have Mr. McEuen's statement that "The difficulty of ascertaining the direction of the wind renders his observations on that subject of scarcely any value, each locality being differently influenced by the vicinity of the mountains." p. 203. With all these admissions I cannot contend against Mr. White's assertion, that wind-vanes and anemometers are of little use. But, does Dr. Burgess imagine that the use of such instruments is to improve the sanative condition of the atmosphere?

"and that the sky cannot be generally so clear, nor the atmosphere so calm, as that of Italy, from the position of the island, and nature of the surface. With all these admissions, Mr. White is ill pleased at somewhat similar observations put forth by Dr. Mason, another recent writer, on this climate."

It is scarcely worth while to make any remarks upon this, but I must separate it from the following.

"Mr. White explains the cause of the latter author's unfavourable opinion of the sanative effect of the climate thus: 'Dr. Mason, writing under the morbid influence of active disease, complained bitterly of the cloudy sky, the high winds, and the variability of the climate of Madeira.' It is also stated that the position of his instruments was not well chosen. However, a summary of Dr. Mason's observations will enable the reader to form his own opinion as to their merits, and the reliance to be placed on them."

An author, who has examined Dr. Mason's work and

made a summary of it, and who asserts or implies that Dr. Mason entertained an unfavourable opinion of the *sanative effect* of the climate of Madeira, must be too much prejudiced to be capable of understanding, or else he wilfully perverts the truth. And to assert that Mr. White explains the cause of such alleged unfavourable opinion, is almost equally a misrepresentation of Mr. White's work.

The paragraph in the latter work, from which Dr. Burgess makes the above quotation is,—“The late Dr. Mason, in his treatise on the climate and meteorology of Madeira, appears to have detected a greater degree of moisture in the atmosphere around Funchal than is shown by the tables of other observers; and while writing under the morbid influence of active disease, complained bitterly of the cloudy sky, the high winds, and the variability of the *temperature encountered* in Madeira. The situation where his observations were made is *notoriously* one of the least favourable for that purpose in the outskirts of Funchal; and this circumstance, together with the fact of his hygrometer being placed in a close room, between two windows, near an open tank, and surrounded with trellised vines and vegetation, independent of the acknowledged severity of the season during which they were made, will sufficiently account for the difference existing between his observations and those of other parties. As regards the cloudy sky and high winds, the tables of Charles McEuen, Esq., *published in the same volume*, offer a sufficient refutation, as will be seen from the following summary:—” p. 73-4. This summary is too long for insertion here. It did not suit Dr. Burgess's purpose to give even the first half of Mr. White's first sentence. It suits my purpose to give that sentence entire, because it shows that Dr. Burgess cannot have overlooked the fact that Dr. Mason's hygrometry indicated a greater degree of humidity than that of other observers; whilst the remainder of the paragraph mentions the causes which account for that circumstance, and which, as I have

already shown, *are confirmed by Dr. Mason's own description.*

If it were true that Dr. Mason had made all the bitter complaints above alluded to, surely Dr. Burgess's summary of Dr. Mason's work would give us some account of them. I have passed my eyes over every page of Dr. Mason's work for the express purpose of finding them, and I have not found one word to justify Dr. Burgess in adopting Mr. White's inconsiderate admissions.

I have found only one allusion to *high* winds, viz., "The land and sea breezes alternate with great regularity during the summer months, but during the rainy season they are irregular. Indeed, if from any cause they pass over the regular time of their appearance, more or less rain generally follows, accompanied with strong winds." p. 42. And only one allusion to *cold* winds, viz., "During my stay in the island (of St. Michael's) there was a prevalence of the north-east wind which I found to be much more cold and bracing than at Madeira; although, at the latter place it is by no means divested of its chief characteristics, as has been frequently stated to the public. Dr. Leman, who, as well as many others with whom I was acquainted, was peculiarly affected by this wind in England, also suffered from it in Madeira, but not to the same extent. We may therefore conclude that in the latter its peculiar qualities are only modified, but by no means entirely destroyed." p. 107.

It is true that Dr. Mason describes the sky of Madeira as *cloudy*, but *by no means in the tone of complaint*. On the contrary, he writes thus,—"The sea-breezes "tend to maintain an equality in the temperature, by lowering it during the day; while in the night, it is not much reduced by radiation, as that is greatly prevented by the cloudy state of the atmosphere." p. 45.

Lastly, with respect to the variability of the *climate of Madeira*, as Dr. Burgess writes, or of the *temperature encountered in Madeira*, which is Mr. White's expression, Dr. Mason writes as follows. After referring to the

necessity for fires for invalids at St. Michael's, he adds:—"Indeed, at Madeira, fires are a great desideratum; for although the range of temperature is *small and equable*, nevertheless, after a short residence, the system gets so inured to a *constant and almost invariable temperature*, that a sudden variation from 3° to 5° is much more felt than a far greater range would be in *England*; where the temperature is *always unequal* and liable to *sudden and great variations*." p. 106. Surely this is a complaint of the equality of the temperature in Madeira rather than of its variability.

With the exception of some remarks on the lestes, a subject to which Dr. Burgess draws our attention a little further on, the above are, I believe, the sum and substance of Dr. Mason's *bitter* complaints of the high winds, cloudy sky, and variability of the temperature encountered in Madeira! Dr. Burgess, who professes to give "a summary of Dr. Mason's observations", and to place before his readers "the leading facts" contained in that work, cannot plead ignorance of its contents, and he has no excuse whatever for quoting Dr. Mason's alleged opinions out of the work of another author, who has obviously mistaken them. Dr. Burgess not only does this, but he omits all allusion to Mr. White's refutation of some of those alleged opinions, although that refutation occurs in the same paragraph, and is founded upon facts extracted from the same volume which is supposed to contain those opinions.

"Madeira is pretty generally regarded, in this country, both by the profession and the public, as affording the climate, *par excellence*, for promoting the cure of pulmonary consumption. Dr. Mason, who ultimately fell a victim to phthisis, went to Madeira with the belief that he would recover his health, under the alleged sanitary and benign influence of the climate of that island."

Certainly this is a faithful "summary" of the facts, as related in the editor's preface to Dr. Mason's work; for

in this preface we are told that "his visit to Madeira, and consequent residence there for a period of nearly two years, were purely accidental"; that Dr. Mason started for Nice; that "this object, however, was unfortunately frustrated" by his *disregard of self*, and devotion to a sick relative, and that he then came to Madeira; that Dr. Mason afterwards made a second attempt to reach Nice, "the climate of which, he had always been persuaded, was far better adapted to his case." And Dr. Burgess, himself quoting the same preface, tells us, as we shall see presently, that Dr. Mason died, not in Madeira, but at Nice; and not of *phthisis*, but from an attack of *dysentery*, brought on by over-fatigue or want of nourishment on the last day of his journey from England! Moreover, the same preface proceeds to tell us, though Dr. Burgess does not, that upon examining the body it was found, that though the lungs were seriously diseased, the state of those organs did not preclude the probability that life might have been preserved for yet some four or five years.

Even if it were true that Dr. Mason went to Madeira with any such confidence in the benign influence of the climate in his own case, and if it were also true that he died there of phthisis, yet it is perfectly ridiculous to bring forward such a case as an example of disappointed hopes; for the very first paragraph of the editor's preface tells us that:—"Apart from the value of Dr. Mason's work as affording a just estimate of a climate" (which, by the bye, both the author and the editor afterwards tell us it does not do), "the resort of a particular and large class of invalids, his labours acquire an interest from the fact of their having been prosecuted in a state of extremely infirm health, *regardless of the influence which they must have had in aggravating the symptoms, and lessening the chance of recovery.* He may truly be said to have *sacrificed his life to professional zeal.* Contending with an extensive derangement of the pulmonary functions, he resolutely *cast aside all solicitude* for his own health; and, without intermission or pause, completed a series of difficult and

fatiguing observations, with the noble view of rendering a benefit to society. The *exposure* and *privations* which he would have imperatively prohibited a patient from encountering, he fearlessly and enthusiastically contended with in his own person ; undeterred by the most *trying fluctuations of temperature*, the prostration attendant upon a constant strain of mind, and the watching which broke in upon that ordinary rest which even the robust cannot forego without some degree of suffering. To none would he, for a moment, depute the task which he had undertaken ; and, when all around him were enjoying repose or courting it, this *martyr*, as he may be called, to *meteorological investigation*, passed the night *with his instruments and journal*, noting down the minutest changes which the atmosphere underwent, from the first sinking of the sun to the first indication of its rising."

"He remained there nearly two years, during which period he occupied himself most assiduously with meteorological investigations, with the view of showing the real character of the climate, noting down the minutest change which the atmosphere underwent."

This, certainly, is no exaggeration of the facts as they are related in the editor's preface to Dr. Mason's work, as may be easily imagined from the extract which I have just given. But to reduce an over-drawn recital, which is scarcely credible, down to the limits of sober sense, is not a fair way of placing it before readers who are told to judge for themselves.

"The result of his laborious researches is a series of observations on the climatology of Madeira, the most elaborate that have yet been published on that subject."

Considering the shortness of the period during which Dr. Mason resided in the island, his observations may fairly be described as very elaborate, as may be imagined from the following extract :—"Nos. 4 and 5. *Mrs. Mair's*

Well. Examined October 30. Upper well ; depth, 28 feet—open ; depth of water, 7 feet 9 inches. One P.M.—temperature, 6 inches beneath the surface, 64° ; temperature of the bottom, 64° . Lower well ; depth, 18 feet—pump ; depth of water, 9 feet ; temperature of the bottom, $63^{\circ} \frac{1}{2}$."

" But what do they go to prove ? Simply, that the popular faith in the virtues of this climate in pulmonary consumption is founded, for the most part, in tradition and romance ; that, in short, the climate of Madeira, as regards the cure of phthisis, is as great a delusion as the climate of Italy."

This most simple proof is not Dr. Mason's, but Dr. Burgess's own gratuitous inference. It was Dr. Burgess, and not Dr. Mason, who began with the romance about the blessing of Herodotus ; and it is Dr. Burgess, not Dr. Mason, who draws the above conclusion, either from the bottom of Mrs. Mair's well, or from some other equally profound source of information. However, Dr. Burgess has undertaken to give us a summary of Dr. Mason's observations, therefore let us proceed to consider them calmly.

" I shall place before the reader the leading facts contained in Dr. Mason's work.

" The author, having given a minute description of the manner in which the observations were obtained, in regard of time, geographical situation, and the character and local position of the instruments, proceeds to correct the first popular error as to the nature of the climate."

Dr. Burgess has chosen to introduce Dr. Mason's work by telling us that Mr. White finds fault both with the opinions of that author, and also with the position of his instruments ; and Dr. Burgess professedly proceeds to give such a summary of the former author's work as will enable his readers to judge for themselves as to its merits ; and, as we have a right to infer, to decide upon the justice of Mr. White's accusation. Dr. Burgess first took

care that his readers should not know in what respects Mr. White finds fault with the position of the instruments; and now, when we come to Dr. Mason's description, Dr. Burgess makes a "summary" of it by telling us that all the above-mentioned particulars are minutely described in Dr. Mason's work.

Dr. Mason himself tells us that the details respecting the position of the instruments, etc., are in many cases as valuable as the observations themselves. If there ever was a case in which these details ought to be laid before the reader, it is surely the present one, where, as Dr. Burgess himself tells us, a question has arisen on that very point. Does Dr. Burgess expect that his readers will be able to form their own opinions on these matters of detail, and of the consequent merits of the observations, and the reliance to be placed upon them, which, of course, depend upon these circumstances, simply by knowing that they are minutely described in Dr. Mason's work?

I have already shown that Mr. White's charge against the accuracy of Dr. Mason's observations is a much more serious one than Dr. Burgess chose to represent it to be; and I have also shown, in the former part of this letter, that Dr. Mason's own description confirms Mr. White's in many particulars. Further, I have shown that Dr. Burgess cannot have overlooked the fact that Dr. Mason's hygrometrical observations indicate a greater degree of humidity in the atmosphere than those of other observers. Nevertheless, or perhaps for this very reason, Dr. Burgess coolly puts forward Dr. Mason as *the* authority who corrects what he is pleased to designate as a popular error on that very subject; and he writes of the *first* popular error as if there were a series of them, but does not mention the others. We may, therefore, presume either that the others do not exist, or that they are not worth correcting.

“ ‘With respect to the hygrometric condition of the climate of Madeira,’ says Dr. Mason, ‘we

must enter into some detail, particularly as no one has confirmed Dr. Heineken's observations* which appear to have been greatly overlooked by the medical profession, who persist in regarding the climate as *essentially dry*, whereas, if any confidence can be placed in the data obtained by Dr. Heineken and myself, it must be admitted to be saturated with humidity during the greater part of the year, in which respect its advantages are little superior to the climate of London, while as regards the action of humidity on the organization, it is infinitely inferior.'"

Considering what Dr. Heineken himself says respecting the little value of his own *hygrometrical* observations, it is not much to be wondered at that the opinions of the medical profession have not been greatly, if at all, influenced by them. But instead of showing that the air of Madeira is saturated with humidity during the greater part of the year, out of 331 observations there are only two that indicate saturation, whilst the average of the whole number gives the depression of the dew-point no less than 7° 7 F. Dr. Burgess gave us Dr. Mason's opinions on the authority of Mr. White, and now we have Dr. Heineken's hygrometry on the authority of Dr. Mason!

Dr. Mason's work does not contain a copy of his own meteorological register, and consequently we do not know how often his hygrometer indicated that the air was saturated with moisture: but Table xxiv gives us the minimum dryness for every month in the year, and shows that during six out of the twelve months the hygrometer *never once reached the point of saturation*: and, though during each of the remaining six months it did reach that point, there is nothing to show that it did so more than once; whilst the column of maximum dryness shows that the hygrometer did not remain at, or even near to, the point of saturation during the whole of any month.

* The words in the original are: "Dr. Heineken's observations made in 1826," p. 6. Why this date is omitted by Dr. Burgess I know not.

We must not overlook Dr. Mason's admission, that though the climate is, as he alleges, saturated with moisture during the greater part of the year, yet it is superior to the climate of London in that respect. This is a valuable admission, since it comes from Dr. Mason.

I freely admit that Dr. Mason describes the air of Madeira as containing a large quantity of insensible moisture, but he does not describe it as humid in any other sense. On the contrary; he gives us a small number of hours of rain. I do not remember that he even mentions such things as fog and mist, and those words do not occur in the index to his work.

Lastly, I dispute the correctness of Dr. Mason's hygrometrical results. I have already discussed the position of his instruments, and I have already pointed out that if Dr. Mason's results are properly compared with those of Dr. Heineken, the latter give the mean annual depression of the dew-point 37 per cent. greater than the former; and that Mr. MeEuen makes the average depression of the wet-bulb hygrometer for the same season of the year, viz., December to May, both included, 106 per cent. greater than Dr. Mason.* I may now add that Mr. White makes the average depression of the wet-bulb thermometer for the same season, viz., October to April, both included, 150 per cent. greater than Dr. Mason.† The observations used in the above comparisons were made in the years and at the hours following: Dr. Heineken's, in 1826, at 10h. a.m.; Dr. Mason's, in 1834-5, at 9h. a.m.; Mr. MeEuen's, in 1848, at 9h. a.m.; Mr. White's, in 1850-1, at 8h. a.m. Dr. Burgess, having before him, as we have a right to understand, the materials for making

* Though the monthly results are placed together for the purpose of comparison, I think that Dr. Mason's are exclusive, and Mr. MeEuen's inclusive of lasses; so that 100 per cent. would, perhaps, be a fair estimate of the difference between their observations, though scarcely of the stated results.

† An observation similar to that in the preceding note is, perhaps, applicable in this case also.

the above comparisons, and having had his attention drawn to this very question by Mr. White, who tells him the general result of the comparisons, suppresses the last fact by quoting the second half of a sentence, and omitting the first half; and then proceeds to adopt Dr. Mason's representations respecting the humidity of this climate, and to treat him as *the* authority: and Dr. Burgess, without giving his readers a hint of the above facts, coolly tells them to judge for themselves of the merits of Dr. Mason's observations, and the reliance to be placed upon them, by means of his own garbled summary!

With respect to the allegation that the climate of Madeira is infinitely inferior to that of London, as regards the action of humidity on the organization, I must first supply a few words. Dr. Burgess has quoted the whole of a paragraph, except the date of Dr. Heineken's observations, and the concluding words of the last sentence, which are,—“as I shall prove in the proper place.” Mason, p. 6. Now upon this really important question Dr. Burgess prefers bare assertion *without* proof to assertion *with* proof; for here he has the proof offered to him and he rejects it. Consequently we may conclude that the proof does not suit Dr. Burgess's purpose. Since Dr. Mason's work does not contain any proof deduced from the results of cases, we must, of course, turn to that part of his work entitled “Physiology” for the promised proof respecting the effects of atmospherical humidity on the animal organization. Whilst turning over these chapters on physiology, in search of the proof in question, I found some of the passages which I have already quoted, especially the one in which the author tells us that, *in its effect* on the animal economy the *summer* season, in London, approaches to the Madeira climate, being *slightly* modified by *temperature* and *hygrometric* condition: and another in which he writes of the propriety of a change to a *warm* and humid climate *like Madeira*, in certain cases; and dwells upon the necessity for a *temperate* atmosphere, because, although the air be saturated, yet, *if it be cold*, it

will not have the *desired effect*. Though Dr. Burgess might have found some passages on the other side of the question; yet, since they apply only to another class of cases, and do not utterly condemn this climate, but are merely intended to prove that, although it is calculated to be highly beneficial to some constitutions, yet it would be injurious to other constitutions, we can easily imagine that Dr. Burgess immediately condemned Dr. Mason's theoretical proofs as sheer nonsense, (probably they are so) and then, notwithstanding the promises about positive data, it was extremely easy, and much more convenient, to correct Dr. Mason's paragraph by striking out the reference to such proofs. Some persons would think that the conclusion ought to fall, together with the proofs upon which it is founded. Dr. Burgess, perhaps, thinks that he has merely separated the sense from the nonsense, and thus enabled his readers to judge for themselves of the merits of Dr. Mason's work.

Thus Dr. Burgess, having selected from Dr. Mason's work a paragraph, the greater part of which is untrue as to facts, and the most essential part of which is flatly contradicted on another page, and is inconsistent with the general purport of the whole work, and is also inconsistent with the opinions of the two other authors, whom Dr. Burgess puts forward as authorities, but whose opinions are suppressed,—having selected this *precious* paragraph, Dr. Burgess first trims it to suit his own purposes, and then introduces it to his readers by telling them that Dr. Mason “proceeds to correct the first popular error respecting the nature of the climate”! Surely “tradition and romance” and even “popular errors” may hold up their heads and look down with contempt upon such corrections as these! It may be observed, in Dr. Mason's excuse, that his work was not published by himself, nor until about fifteen years after his death.

“The author supports this statement by a series of tables, from which it would appear, that at the temperature of 50°, which is near the mean tem-

perature of London, the air, if saturated, is capable of holding 100 parts of moisture in solution, while at the temperature 68° , which is rather above the mean temperature of Funchal in Madcira, it will contain 200 parts, or nearly double what it is able to hold in London."

Judging by this paragraph, I presume that Dr. Burgess does not profess to have any knowledge of the science of meteorology ; for I cannot imagine that any person at all acquainted with the rudiments of that science could write such a statement. First, Dr. Mason does not say that the air of London is capable of holding 100 parts of moisture, *except* upon a previous arbitrary supposition respecting the magnitude of those parts, which Dr. Burgess omits, and thereby converts this statement into unintelligible nonsense. Secondly, to represent the fact thus stated, as one that appears from Dr. Mason's *series of tables*, indicates an ignorant misapprehension of the whole subject ; for Dr. Mason does not refer to his own tables, but merely quotes, from Sir John Leslie, a physical law, namely, what is there called the law of the dissolving power of air as affected by heat, but which is now known to be merely the law of the tension of aqueous vapour independent of atmospheric influence as a solvent. And, of course, no attempt is made to prove that this law is applicable to the climate of Madeira. Thirdly, the preceding statement, which Dr. Burgess informs us is thus supported, alleges two things ; the first relates to the fact of saturation, and the second to the inferior action of humidity on the animal organization. Now, I presume that Dr. Burgess, as a physician, could not mean to tell us that the latter allegation is, or could be, proved by a series of meteorological tables ; and the only other alternative is, that the former allegation is thus proved. But, to suppose that Dr. Mason intended to prove, or even to support, his statement that the air of Madeira *is* saturated, by pointing out that *if it were* saturated it would contain twice as much moisture as the air of London, is too absurd. Is this a specimen of

Dr. Burgess's interpretations of meteorological observations, by virtue of which it is incontestably established that Madeira is no exception to the rule which he lays down respecting *foreign* climates? Doubtless Dr. Burgess has devoted his time to his profession, its studies and its duties; and, if he has not found leisure to make himself acquainted with the collateral science of meteorology, he is in the position of the majority of his professional brethren, and of other professional men, who, for want of time, must make some similar omissions. This may be a valid excuse for his misapprehension of Dr. Mason's statements, but hardly for putting them together in a manner which is equivalent to gravely telling us, that a certain quart measure is brim full, and *supporting* that statement by reference to a *series* of tables from which it would appear that a pint measure, if full, is capable of holding 100 parts of water, whilst a quart measure will contain 200 parts, or double what a pint measure is able to hold. Lastly, since Dr. Burgess is not bound to abide by my selection from the two above-mentioned alternatives, it may be as well to add, that if Dr. Mason's alleged supporting statement be taken entire, whatever it may prove with respect to Madeira when compared to London, is just as conclusively proved with respect to London when compared to Lapland, or any other place the mean temperature of which is that of freezing water; for the supposition that air at 32° and saturated, is to be considered as containing 50 parts of moisture, is the very foundation of Dr. Mason's statement that, if saturated, the air of London would contain 100, and the air of Madeira 200 such parts; whilst as regards the fact of saturation, it is admitted that London is even worse than Madeira. Surely Dr. Burgess, when he omitted the first half of Dr. Mason's statement, must have been apprehensive lest his readers should become too much enlightened on the subject, and should perceive that the mysterious science of meteorology, when truly interpreted, is not opposed to *foreign* climates as a resort for consumptive invalids, but

merely corrects the popular error of sending them *southward* instead of *northward* !

“ Madeira has its Sirocco as well as Italy ; but the characters of the wind so named in the two localities, although equally injurious, are yet essentially different. The wind called by the Italians Sirocco, which visits Naples and the south of Italy from the opposite shores of the Mediterranean, is hot, *moist*, and relaxing. On the contrary, the wind denominated by the Portuguese *leste*, is essentially hot and dry, and of a highly stimulating nature ; so that it soon exhausts those in health by means of its exciting qualities.”

Dr. Burgess quotes Dr. Mason’s work sometimes with and sometimes without marks of quotation, and inserts his own opinions in such a manner as to render it impossible to distinguish the one from the other, without referring to the original work. Are we to take it as Dr. Burgess’s or as Dr. Mason’s opinion that two winds so essentially different are equally injurious ? Dr. Mason’s work contains numerous statements to the contrary, and amongst others, that “ the condition of the atmosphere during a leste, is by no means too dry for a great portion of the invalids sent to the island.” p. 27.

With the exception of the first sentence, the above paragraph in Dr. Burgess’s work, though not so marked, is quoted verbatim from Dr. Mason’s work, p. 21. Of course these are choice sentences picked out to give the strongest possible prejudice against the climate ; and, as might be expected, very ill represent a summary of Dr. Mason’s real opinions as expressed in his work. The several extracts which I have made from the same work sufficiently prove the truth of this remark.

I must add that Dr. Heineken gives us an instance of what he calls a “ thick partial sirocco” in Madeira, whilst a Daniells’ hygrometer indicated only one degree from saturation. There are other examples at 3°, 5°, and 8° respectively, but it is not certain that the hygrometer was

observed during the actual prevalence of the leste, though it occurred on the same day. In the first-mentioned example, however, the sirocco lasted two days, which removes all reasonable doubt on that question. On a subsequent page (p. 169), Dr. Burgess, quoting another author, describes the sirocco *of Italy* as perhaps more frequently dry than moist! Such is my own experience of it. Which is Dr. Burgess's real opinion we cannot know. But what can it signify whether these winds are moist and relaxing or dry and stimulating? Is it not clear that if one description is false the other *must* be true? and Dr. Burgess has pronounced that both are equally injurious. Are not these positive data upon which we may safely found a conclusion?

“By referring to the tables of Dr. Mason having reference to this matter, it appears that the maximum dryness observed during the leste is $22^{\circ}.5$, and that the mean of the year, from nine a.m. to nine p.m., only amounts to $3^{\circ}.91$; while, if the humidity during the night were taken into account in calculating the mean dryness, it would be at least one degree and a half less, making the mean annual dryness of the climate only $2^{\circ}.5$, or at most 3° .

I confess I was surprised to find that Dr. Burgess had taken the trouble to examine Dr. Mason's tables, and to make deductions on his own account; but the mystery disappeared, when I discovered that this paragraph, which Dr. Burgess gives as if it were his own, was, in fact, copied from Dr. Mason's work, (see p. 26,) except the introductory words, which, in the latter, are,—“By referring to the tables, it will be seen,” etc., and except that Dr. Burgess has substituted *the* leste for *a* leste. Dr. Mason refers to a table (Table xxv), which gives us the maximum dryness of six lestes, as follows:—January, 9° ; February, 9° ; March, 14° ; June, 15° ; October, $22^{\circ}.5$; December, 13° . He then makes some remarks on the most severe of these. Dr. Burgess copies these remarks,

and not only omits all mention of the other lestes, but, by substituting the article *the* for *a*, he conceals the fact that there were others, and converts Dr. Mason's remarks into a representation of what always, or, at all events, usually occurs when that wind blows. Moreover, Dr. Burgess, of course, gives his readers just so many of Dr. Mason's remarks as answer his own purpose, and omits one which informs us that the dryness of this one remarkable leste has been equalled at Paris. (p. 28.)

Dr. Burgess has not explained what is meant by *degrees* of dryness. Apparently, our author is too ignorant of the subject on which he writes to perceive that such an explanation is at all needed.

Dr. Mason's work is not very clear upon this point; but I believe that the mean annual dryness, as estimated by him, is exclusive of lestes, that is to say, exclusive of the driest periods, without any natural indication of the point at which the division ought to be made. This is obviously an unfair method of estimating the *mean* dryness, and tends to exaggerate the difference between the mean and the maximum dryness.

“And Dr. Mason made other observations in London on his return to this metropolis, which go to prove that London and its vicinity are drier than Madeira, at the period of the year (June and July) when they were taken.”

Dr. Mason's statement is so feebly supported by the facts upon which it is based that it will not bear the slightest embellishment from Dr. Burgess's pen. He writes, p. 30, —“Since my arrival in England the *few* observations I have had an opportunity of making *tend* to prove that London and its vicinity are drier than Madeira at the period of the year when they were taken.” He then informs us that he made observations on *three* successive days in June, at a house in Kent; and on *seven* successive days in July, in a street near Finsbury-square. One is surprised that Dr. Mason should have thought these few

observations worth mentioning as even tending to prove what he asserts. And certainly we must have a high opinion of the judgment of an author who places such a statement before his readers as one of "the leading facts contained in Dr. Mason's work," *and leaves them to conclude that it is properly substantiated!* It is somewhat unfortunate, too, that Dr. Burgess's pen should have tripped at the word *few*. But I have not yet fully brought to light the absurdity of Dr. Mason's statement as it stands in his work. The mean results of his observations, in what he calls degrees of dryness, are,—near Finsbury-square, $6^{\circ}.20$; a place in the vicinity of London, $3^{\circ}.83$; Madeira, mean for June and July, $4^{\circ}.73$. Now, so far as we can draw inferences from these figures, the comparison between Madeira and the neighbourhood of Finsbury Square is in favour of the latter; and the comparison between Madeira and one place in the vicinity of London, is in favour of the former; but taking the two together, we have 28-100ths of a degree in favour of London *and* its vicinity as compared with Madeira! This appears to be the whole foundation of the above statement, though I have not mentioned all the particulars. Thus seven days observations at one place in the heart of London, and three days observations at another place in the vicinity of London, are made to include all London and its vicinity, as well as the whole of two months! With such a summary of Dr. Mason's observations, what reader of Dr. Burgess's work can fail to appreciate their merits and the reliance to be placed upon them? With such "leading facts" as these before them, who can resist Dr. Burgess' conclusions, "that the popular faith in the virtues of this climate in pulmonary consumption, is founded, for the most part, in tradition and romance; that, in short, the climate of Madeira, as regards the cure of phthisis, is as great a delusion as the climate of Italy," and that Dr. Mason's meteorological observations "*simply*" go to prove those conclusions?

The above-mentioned result even for Madeira, if for no

other reason than that it is deduced from observations made in one year only, cannot be of much value : but that such utterly childish nonsense, as the comparison to which I have just drawn attention, should be found in Dr. Mason's work, is really surprising. That such a comparison should be repeated, or rather misstated, by Dr. Burgess, is quite consistent with the rest of his chapter on Madeira.

“ Finally, in order to show the dampness of the climate of Madeira, Dr. Mason observes : ‘ I may instance the impossibility of keeping iron, in any form, from being rapidly oxidized. The different powders, such as opium, squills, etc., soon lose their pulverulent form, and become firmly united into a solid mass ; various neutral salts rapidly deliquesce ; gloves, shoes, etc., soon become covered with various species of cryptogamous plants ; silks become spotted and unfit for use ; pianofortes frequently require tuning ; and the serews of various other instruments, as violins, guitars, etc., become so tight as to be almost immoveable.’ ”

Though I am dealing with Dr. Burgess's work rather than Dr. Mason's, I cannot pass by the above-quoted statement of the latter author without a few words.—We all know that in England, even in houses which are not remarkably damp, iron gets rusty, and shoes get mouldy, etc. That there are damp houses in Madeira, and that Dr. Mason's was one of them, I by no means dispute : but I deny that the climate of Madeira is damp ; and I deny that English invalids need, or usually do, inhabit damp houses.

Notwithstanding the word “ finally ” which introduces the above quotation from Dr. Mason's work, Dr. Burgess has thought it advisable to cut off the latter portion of Dr. Mason's paragraph, which has, certainly, a better claim to be considered as final, though by no means conclusive. It is as follows : “ In fact, it would be impossible for vegetation to flourish, were not the atmosphere almost saturated with moisture ; as frequently, during the

fine season, there is scarcely a shower of rain for three, four, and sometimes even six months in succession (p. 31)."

Dr. Burgess, no doubt, thought that the absence of rain for three or four, or even for six months in succession, did not prove the climate to be damp; especially as we have no evidence that vegetation does flourish under such circumstances. Consequently the absence of rain for so long a period is not, in Dr. Burgess's estimation, a "leading fact" worth mentioning.

"The following observations, with reference to the variability of the weather at Madeira, will perhaps surprise the reader:—'The very frequent and remarkable variations in a given series of years, incontestably prove that Madeira is no more to be relied on than any other place for certainty of fine weather, and that it has equally its annual variations of temperature.'"

Truly the reader ought to be surprised, if he gives credit to Dr. Burgess' quotations, that such an extraordinary statement should be made by a person who had resided nearly two years in this island. But his astonishment will, perhaps, take a different direction, when he is informed that Dr. Burgess has perverted Dr. Mason's statement by cutting out ten words from the *middle* of the paragraph which he has quoted; and that these words, if restored, reverse, or at all events negative, the meaning of the paragraph as given by Dr. Burgess. At page 32, Dr. Mason tells us that the year 1834 (being the one to which his observations principally relate) was considered by the inhabitants as very extraordinary. This peculiarity Dr. Mason seems unwilling to admit, and he makes some remarks to discredit the testimony of the inhabitants when brought forward to prove, that particular seasons were variations from all former experience, and tells us, in effect, that such testimony is *not strictly correct*. Shortly after these remarks, we have the sentence in question, which is as follows:—"The very frequent and

remarkable variations, in a given series of years—providing the ordinary observations of the inhabitants be strictly correct—inecontestably prove,” etc. (p. 35.) This proviso Dr. Burgess omits! It is obvious that Dr. Mason does not assert any such fact as that which Dr. Burgess gives on his authority, and professedly, though not in truth, in his words. And what Dr. Mason does say, admits of being understood to imply exactly the reverse. Are you surprised? I am not.

“The number of days in which rain falls is set down by all previous writers on Madeira at seventy-three. During the last year of Dr. Mason’s residence on the island there were, however, 101, giving a majority of twenty-eight days more than the mean of a series of years. But that year was an exception, the peculiarity of which Dr. Mason attributes to a greater prevalence of continuous wet; the rain not falling in those violent and intermitting showers so characteristic of this climate, but rather after the manner of our own autumnal season.”

You must not infer from the first sentence of this paragraph that Dr. Burgess has examined the works of the previous writers above referred to. The whole paragraph is copied from pages 35 and 36 of Dr. Mason’s work, with some verbal alterations, and transposition of the sentences, which gives them a false connection. However, the sense is thus rendered more clear, and I am not prepared to say that it is incorrect.

“Upon the regularity of the land and sea breezes—the north-east and south-west—the salubrity of the island mainly depends; for whenever there is any remarkable or continued variation of these currents, the health of the inhabitants suffers more or less severely. During the summer months they alternate with great regularity, but during the rainy seasons they are very irregular.”

Dr. Burgess here informs his readers that the land and

sea breezes of this *island*, of this speck in an ocean, are the north-east and south-west! This is a phenomenon worth studying; and not merely as a matter of euri-osity: for it seems, after all that we have read, and before all that we are yet to read, the salubrity of the marvellous island of Madeira, in fact, depends upon this curious freak of nature—perhaps I ought to write, *mainly* depends—but no, that word is an interpolation by Dr. Burgess. We were prepared by Dr. Burgess' preface to meet with some statements opposed to popular notions prevalent in England, but he has performed only one-half of his promise. The reader will naturally inquire for the "positive data". Since they are not to be found in Dr. Burgess's work, let us turn to Dr. Mason, and we shall find them as follows:—"Preparatorily to my offering any remarks on the tables, and in order to elucidate the equality of the temperature, it will be necessary to say a few words on the land and sea breezes, which are the N.E. and S.W.; *I must premise, however, that my observations on this subject refer only to the district in which they were made, and to the precise time of their occurrence.* It is upon the regularity of these winds that the salubrity of the *place* depends; for whenever there is any remarkable or continued variation of such currents, the health of the inhabitants suffers more or less severely." (p. 39.)

Dr. Mason then proceeds to account for this, by stating, amongst other things, that no means were then (1834-5) employed to remove the accumulation of refuse, arising from the assemblage of twenty-five thousand people; thus clearly showing, if he had not sufficiently done so before, that he was not writing of the island in general, or even of the environs of Funchal, on all sides. Nevertheless, Dr. Burgess chooses to insert the word *island* instead of *place*, i. e., the particular locality in which Dr. Mason's observations were made. Also, as if he feared that the statement might be a little too strong, Dr. Burgess writes the adverb *mainly* before *depends*, which can hardly assist the

reader to judge of the merits of the original author. Lastly, Dr. Burgess has inserted the adverb *very* before *irregular*. (See Mason, p. 42.)

“Neither is the sky so transparent and cloudless as we have been led to suppose. ‘On the contrary,’ as the author remarks, ‘it is a rare occurrence to see it clear and free from detached clouds, even for two or three hours together, and this invariably clouded state of the sky, is in great measure dependent upon the height of the mountains for the origin of the clouds and for their course.’”

I cannot find this sentence in Dr. Mason’s work. The substance of the first part of it may be seen at page 47, and the substance of the second part at page 46; but, surely, when we meet with a single sentence marked as a quotation, we have a right to conclude that we have the original author’s own words, arranged too in the order in which he placed them.

“We have already noticed, that during the prevalence of the leste, or sirocco of Madeira, the air is excessively hot and parching. Within twenty-four hours after this wind has ceased there is a copious fall of rain; and the author has observed a very strong precipitation of dew three hours afterwards, the atmosphere being reduced from 17° to 7° on the hygrometer, and at seven the following morning to 2° , while the plants and shrubs were covered with dew. Thus we find, a few hours after the leste has ceased, the whole atmosphere, from being intensely dry becomes surcharged with humidity.”

Dr. Burgess has already noticed the first above-alleged fact, and I have already pointed out that the lestes are sometimes, but by no means always, excessively hot and parching. The peculiarities of this wind are sometimes so slightly observable, that it is impossible to distinguish the boundary between the leste and no leste. I must add, that if we turn to the extract from Dr. Mason’s journal

given at page 194, we shall find that the *maximum* temperature of the air during the leste to which the above paragraph refers, being the strongest leste which occurred during Dr. Mason's residence in Madeira, was 81° F., which is *less* than the maximum *usually* attained during the summer in some parts of England.*

The second sentence of the above paragraph is a garbled extract from page 48 of Dr. Mason's work. He tells us, that rain *generally* falls within twenty-four hours after the leste has altogether ceased : and, for the word *copious*, we are entirely indebted to Dr. Burgess's invention ! The remainder of the sentence is given correctly, except that Dr. Burgess has written "the hygrometer", whilst Dr. Mason's words are, "my hygrometer"; but this variation is obviously attributable to ignorance rather than to design on Dr. Burgess's part. With regard to rain falling after the leste, the extract from Dr. Mason's register given at page 194 of his work, relates to the leste to which the above sentence refers. This extract is continued for thirty hours after the leste ceased, and there is no mention of rain, except once on the mountains, which is perfectly immaterial with respect to the place of observation. Further, we have a right to infer that if any rain had fallen at a later period, and within such a time as to be worth mentioning in connexion with the leste, it would not have been passed over in silence. It does not appear whether rain followed shortly after any other leste which was observed by Dr. Mason. Dr. Gourlay's register mentions only one sirocco and one near approach to a sirocco. On the first occasion there is no mention of rain in the same month, and on the second occasion there were showers in the same month ; but we have no precise dates. Dr. Heincken mentions two siroccos and six others, which are

* Since the above was written, I have seen in the *Times* of the 17th of January 1855, a report of the observations made at the High-field House Observatory in 1854, from which I have extracted the following statement of the maximum temperatures of four months, viz., June, 79° 8 ; July 86° 0 ; August, 81° 5 ; September, 82° 1.

marked *partial* or *slight*. The first sirocco was succeeded by five fine days, and a shower on the eighth day. The strongest *partial* sirocco was succeeded by eight fine days; and on the ninth and tenth days the second sirocco occurred; and this was succeeded by six fine days and no rain for sixteen days. In one instance rain fell on the second day after a partial sirocco: but in no other instance did rain fall before the fifth day afterwards. With all these facts before him (for Drs. Gourlay, Heineken, and Mason are Dr. Burgess's principal authorities), Dr. Burgess informs his readers, on Dr. Mason's authority, that within twenty-four hours after *the* leste of Madeira has ceased there is a *copious* fall of rain! Judging from my own experience, I must say that Dr. Mason's statement, as to rain generally falling after a leste, is incorrect; and Dr. Burgess's embellishments make it appear wilfully false. In the course of my experience, which is more than double that of Dr. Mason, no rain has followed any marked leste, within such a period of time as to connect the one phenomenon with the other; and I have no recollection of rain having ever so followed any leste, though I am aware we are sometimes told by the inhabitants that it is to be expected.

With respect to the third and last sentence of the above paragraph, the words are Dr. Mason's; but for their application to, and connexion with, the preceding part of the paragraph, we are indebted to Dr. Burgess. And now let us see how far the premises bear out the conclusion, viz., that the *whole* atmosphere, from being intensely dry, becomes *surcharged* with moisture. First, Mr. Glaisher tells us that, in England, the dew-point is sometimes 30° below the temperature of the air.* Consequently the fact that the wet bulb of the psychrometer (commonly, but erroneously called Mason's hygrometer) was 17° below the temperature of the atmosphere, does not indicate a very extraordinary degree of dryness; since, taking the temperature of the air at 80° , as stated at page 194 of

* Hygrometrical Tables by James Glaisher, Esq., of the Royal Observatory at Greenwich. London: 1847.

Mason's work, the corresponding depression of the dew-point, according to Mr. Glaisher's tables, is only $25\frac{1}{2}^{\circ}$, being $4\frac{1}{2}^{\circ}$ less than what sometimes occurs in England. Also the quantity of aqueous vapour in a cubic foot of air is 4.69 grains; whilst the air of London, at its mean temperature (50° according to Dr. Mason), *if saturated*, would contain only 4.28 grains; so that notwithstanding the *intense* dryness of the air, it actually contained more water than could be suspended in the air of London at its mean temperature (except, of course, in the form of fog or mist). These results may be misappreciated by uninformed readers: but I am justified in using them against Dr. Burgess, since he makes use of similar data, in another place, where they happen to tell in favour of his own views. Secondly, how does Dr. Burgess arrive at the conclusion that the *whole* atmosphere becomes *surcharged* with moisture. Perhaps he has fallen into the popular error, and thinks that the deposit of *dew* proves this. But the very paragraph now under consideration tells us, that there was a *very strong precipitation of dew*, whilst the wet-bulb hygrometer indicated a depression of no less than 7° ; and consequently the dew-point was not less than 10° F. below the temperature of the air; in fact, there was a very strong precipitation of dew whilst the air still remained very dry, not nearly saturated, much less *surcharged* with moisture. All the hygrometrical statistics show that the air was not even saturated, much less *surcharged* at the times when they were made. The fact that rain fell (if it were true) would not by any means prove that the atmosphere below the rain-cloud was *surcharged* with moisture. Indeed I believe that, in certain not uncommon conditions of the atmosphere, rain actually abstracts moisture from the air near the surface of the earth, and thus renders it drier than it otherwise would be, and perhaps, not merely as regards the actual quantity of aqueous vapour held in solution, but also as regards the depression of the dew-point. But, be this as it may, it is well known that sudden and heavy showers often fall whilst the atmosphere near the surface of the earth is not

nearly saturated, much less *surcharged* with moisture. Dr. Heineken informs us, that in one instance a Daniell's hygrometer showed 3° of dryness during the heaviest and most universal rain that had occurred for some time.

I may further remark, that the circumstance of "the" hygrometer having fallen from 17° to 7° , and afterwards to 2° (considered as it is in Dr. Burgess's work, without regard to the corresponding changes in the temperature, which we are given to understand were very great), does not inform us whether there was or was not any increase of aqueous vapour in the atmosphere. Such is the deceptive nature of hygrometric statistics to persons who do not understand them. If Dr. Burgess had understood what he was writing, he might have supplied the requisite data from another page of Dr. Mason's work ; though not without making some sacrifices at the shrine of truth. But, apparently, Dr. Burgess forms his opinion of the meteorological statements of other authors by their sound, and not by their sense : and truly the generality of his readers would do the same by him, if they were left to their own discretion.

"With regard to the precipitation of dew on the island, the author is altogether at issue with Dr. Heineken, who states that, 'at the level of the city of Funchal no perceptible dew is produced, but up the mountains it is profuse.' According to the observation of Dr. Mason, nothing can be more erroneous than this statement ; for when the nights are at all clear, the quantity of precipitation is immense ; so that by exposing a common-sized dinner-plate, in a clear evening, several drachms of fluid may at any time be collected in only a few hours ; while the shrubs and ground-plants are quite wet with moisture, as from a strong shower of rain, and remain in that condition till after eight o'clock the following morning."

Dr. Heineken's opinion is, apparently, quoted from Dr. Mason, who states it for the purpose of contradicting it. The words, "nothing can be more erroneous," etc., to the

end of the above paragraph, are copied from Dr. Mason, except that Dr. Mason writes "as when" instead of "for when", and that Dr. Mason says "and *frequently* remain in that state", etc. See p. 84-5. Dr. Burgess might have added that Dr. Heineken's statement is confirmed by Dr. Gourlay, who says, "a drop of dew seldom falls, except in the higher parts of the island." p. 31. And by Mr. White, who writes, "dews, though profuse at certain seasons in the higher grounds, seldom fall in Funchal." p. 72.

"Madeira seems to have no more immunity from disease than other places. Dr. Heineken and Dr. Gourlay both agree that no disease is more common among the natives than pulmonary consumption, and Dr. Mason corroborates that view. He says—'From my own experience I should be inclined to corroborate Dr. Gourlay's opinion, that consumption and scrofula are frequent in Madeira; and also to add, that affections of the stomach and digestive organs are very general, being the principal causes of death with a majority of the inhabitants. From what has been stated by writers respecting the salubrity of Madeira, a person might be led to believe that disease was scarcely known there; but I am afraid, that were the subject thoroughly investigated, as it ought to be, few places would be found where the system is more liable to general disorder; while, at the same time, I suspect that the average duration of life would turn out to be inferior to that of our own country.' p. 108."

Dr. Heineken has given an opinion, which I have already quoted, that Madeira *does* enjoy much greater immunity from diseases in general than other places.

With respect to Dr. Gourlay's opinion on the prevalence of consumption among the natives of Madeira, his own words will place it in a very different light, and in one which is directly opposed to Dr. Burgess's argument! After writing of Madeira as the favourite retreat of consumptive patients from the northern parts of Europe, Dr.

Gourlay adds,—“ Yet still though *so highly beneficial* in this disease *with the natives of other countries*, it is not to be concealed, that no malady is more prevalent here than phthisis with the natives of the island.” p. 90.

According to Dr. Burgess, Dr. Heineken and Dr. Gourlay both *agree* respecting the prevalence of consumption amongst the natives of Madeira. But Dr. Heineken distinctly tells us that he does *not* agree, since he writes as follows :* “ It has been asserted that no malady is more prevalent here than phthisis [the word used by Dr. Gourlay] with the natives of the island ; but, as far as my own personal experience and the result of my inquiries go, *I incline to a contrary conclusion*”!!!

Such of my readers as may not have Dr. Gourlay’s and Dr. Heineken’s papers at hand, may find their opinions stated in Sir James Clarke’s well-known work on climate, 3rd edit., p. 264-5.

Let us now examine the nature and value of Dr. Mason’s “ corroboration”. At p. 107, he gives an extract from a work by the late Dr. Webster, the title of which is not mentioned.† The passage quoted by Dr. Mason concludes thus:—“ The temperate and *uniformly dry atmosphere of Madeira* is on many accounts to be preferred by the invalid. Although the climate of St. Michael’s cannot be safely recommended to consumptive persons, it is, nevertheless, *rare to see* this disease in a native ; but in Madeira, as appears from the observations of Dr. Gourlay, *no disease is more common*.” Dr. Mason then states that he has quoted this passage particularly with reference to the part of it which shows the general prejudice respecting the *dryness* of Madeira, the erroneousness of which, he says, is demonstrated by experiment.

* The London Medical Repository. Vol. ii, p. 12.

† The above-named is the Dr. Webster who was convicted of the murder of Dr. Parkman, in the Laboratory of the Medical College of Boston, in November 1849. The body was partly destroyed by fire and by chemical agents. This event, which excited so much interest at the time, can scarcely be yet forgotten.

He then adds his own hesitating confirmation of Dr. Gourlay's opinion in the words given by Dr. Burgess. From this double statement ; first, to the effect that the immunity of the natives from disease at one place, does not prove it to be fit for English invalids ; and secondly, that another place is beneficial to English invalids, although the disease prevails among the natives,—Dr. Burgess picks out the one last alleged fact, respecting the prevalence of the disease in question among the natives of Madeira, and adds Dr. Heineken's name to this statement, although he has expressly told us that he inclines to a contrary opinion—and all for what purpose ? Obviously to create a false prejudice against this climate *as a resort for English invalids!* Even Dr. Mason's bare *fears* and *suspensions* respecting the prevalence of diseases in general among the natives of Madeira, are brought forward for the same purpose ; whilst his, and Dr. Heineken's, and Dr. Gourlay's positive testimony in favour of this island as a resort for English invalids is either omitted, perverted, or reversed, and Dr. Gourlay's, as well as Mr. White's, explanations of various reasons why the natives are subject to disease—reasons which obviously do not apply to English invalids—are kept out of sight ! Dr. Burgess having kindly assisted his readers thus far, leaves them to judge for themselves whether his conclusion is warranted by the evidence!

My attention has been drawn by Dr. Barral, an eminent physician of Lisbon, to a recent review,* written by Dr. Burgess. At page 300, we find the following :—“ Dr. Francis next describes the climate of Lisbon, which, however, he does not recommend for phthisical patients, seeing that consumption is on the increase amongst the natives, as amongst the Portuguese at Madeira, and that it is one of the most common causes of death.” Those who take sufficient interest in the matter, would do well to read the whole of the 119th page of Dr. Francis's

* The British and Foreign Medico-Chirurgical Review. October 1854. London.

work, and to compare it with Dr. Burgess's statement of its purport: but my object in referring to this review is to point out that the words, "as amongst the Portuguese at Madeira", is an interpolation of the reviewer! Again, at page 303 of the same review, Dr. Burgess writes: "Even at Madeira, the quantity of rain exceeds considerably that of Cadiz"; thus giving only one-half of Dr. Francis's sentence, which is, "Even at Madeira, the quantity of rain exceeds considerably that of Cadiz, although the former place has the advantage on the score of infrequency" (p. 157). Truly an author, who has bestowed time and *thought* upon a work on climate, must feel gratified upon seeing it brought to the notice of the public by means of a review written by Dr. Burgess! In my opinion, in a sanative point of view, and as a general rule to which there may be many exceptions, heavy rains, which rapidly fill the guage, are preferable to drizzling rains, which measure but little in the guage. The former purify the air, and also the surface of the earth, the sewers, drains, etc.; the latter saturate the air, and even the surface of the earth, more completely than the former do. That the *quantity* of rain in Madeira is considerable, *whilst its duration is limited*, are, in my opinion, favourable circumstances.

"The fate of the author was a melancholy one, and a telling comment on the blind credulity which prevails respecting the virtues of *foreign* climates in pulmonary consumption. It is briefly related by the editor in these words:—'Having completed the present work at Madeira, the author determined upon repairing to Nice, the climate of which, as he had been always persuaded, was far better adapted to his ease. This step, had it been taken at an earlier period, and in the proper season, might have ultimately led to his recovery (?) He accordingly embarked for Havre. Proceeding thence towards Nice, partly by land and partly by river conveyance, they reached Avignon, where they took the diligence,

without being aware that there would be no stoppage on the road for refreshments. Some fruit and bread, accidentally provided, was the only subsistence for four-and-twenty hours. They arrived at Nice as dinner was serving up ; but scarcely had they sat down to it, when Dr. Mason felt himself compelled to exchange the table for his bed, to which an attack of dysentery confined him from that moment, until, after a lapse of a fortnight, his death took place.

“How many consumptive invalids have fallen victims abroad to the same delusion !”

The substance of this “telling comment”, or second edition of Dr. Mason’s fate, is, that after he had suffered at least two years from disease, and having survived that period notwithstanding he was engaged in pursuits and occupations that were incompatible with a due regard to his health, he travelled through France to Nice when he had not sufficient strength to encounter the fatigues of the journey ; or else that either imprudence or accident on the road brought on a complaint which speedily terminated in death. Which way is this comment to be read ? Surely Dr. Burgess means to point out, that if Dr. Mason could not find convenient means of getting to Nice by sea, yet he might have escaped the fatigues and dangers of an overland journey by a voyage to Madeira.

It is certainly rather amusing to see the use that is made of one man’s “melancholy” fate. The editor of his own work first appropriates him as a martyr to meteorological science. Dr. Burgess then makes his fate a stain upon the character of Madeira, and subsequently a telling comment upon the dangers of an overland journey to Nice. Why should not Dr. Mason’s editor, who has the first claim, be allowed to keep his martyr ; and Dr. Burgess be required to find some Dr. N. who came to Madeira and ultimately died of phthisis in another place, and a Dr. Q. who died at Nice, of dysentery. Thus we should have three perfectly credible telling comments, instead of a ludicrous contest for one unhappy individual who must

be made to suffer martyrdom in three inconsistent manners. Moreover, why are we not favoured with another "telling comment" furnished by the melancholy fate of Dr. Heineken, which is thus related by Mr. White?—"This gentleman repaired to Madeira in 1820, when his case was pronounced, by some of the most acute physicians in Britain, as rapidly approaching to a fatal termination; yet, under these circumstances, he managed to live in comparative comfort for *nine years*. His death was ultimately occasioned by exposure to the night air, while returning from the adjacent islands of Porto Santo, in an open boat: a storm arose during the passage, from the effects of which he rapidly sank, and died within a few hours of his return to Funchal." p. 179.

"‘The stranger’s burying ground,’ says Mr. White, ‘has a melancholy appearance, and one lingers, not unwillingly, among its rich and fragrant flowers, while reading with sadness the simple tale of many who, in the bloom and joy of youth, having sought these shores for a relief to their sufferings, through the influence of its balmy climate, and far removed from the endearing ties of friends and home, have only found that relief in the grave.’”

Mr. White’s words are,—Altogether, this spot has a *pleasing*, though melancholy appearance (etc., as above).

“Yet, emblem of the soul, sweet flowers are springing.”
 etc. etc. etc.

Dr. Burgess must, indeed, have been sadly at loss for a pathetic argument with which to finish off the climate of Madeira, if he could find nothing better than a sentence which forms the introduction to some pretty lines of poetry which Mr. White applies to the strangers’ burying ground. And even this sentence Dr. Burgess has mutilated by cutting out the word *pleasing* !

We are not favoured with a similar summary of the

meteorological observations of Drs. Gourlay and Heineken ; and the part of Dr. Burgess's work, especially devoted to the climate of Madeira, ends here. Where, then, are the positive data upon which Dr. Burgess founds his assertion that the meteorological observations of Drs. Heineken and Gourlay, as well as of Dr. Mason, incontestably establish that Madeira, with all its sanitary fame, is no exception to the rule which our author lays down respecting the non-beneficial effects of warm air and sunny skies in *foreign* climates ? I shall add a few lines to supply this deficiency.

Dr. Gourlay's register contains monthly statements of the highest, lowest, and medium states of the thermometer and of the barometer ; accompanied by general remarks on the wind, weather, and state of the vegetation ; *but no hygrometrical observations whatever*. At the end of the register, as printed for ten years, we find the following note,—“ The editor has taken the liberty of terminating here, the series of meteorological observations. Their continuance for so long a period as sixteen years, affords undoubted proofs of the persevering attention and unwearied diligence of the author ; but it seems questionable whether the curiosity of any reader could overcome their monotonous sameness, which is augmented by the steady uniformity of a mild and temperate climate.”

When Dr. Burgess tells us, unequivocally, that he has really examined this ten years' register ; points out in what manner it warrants or gives any, even the slightest support to his conclusions ;—when Dr. Burgess furnishes us with grounds for believing that the incontestable proof professedly drawn, in part from this source, is in fact drawn from any other source than his own imagination, it will be time enough for me to labour over the same ground. In the mean time I shall be satisfied with Dr. Gourlay's conclusions, which are directly opposed to those of Dr. Burgess. I must add, however, that according to the title prefixed to Dr. Gourlay's register his observations were made in the city of Funchal : but Dr.

Heineken tells us that these observations* “were made by the late James Murdoek, at a place called the *Valle*, about 400 feet” (300 ?) “above the level of the sea ; and do not therefore apply to the city of Funchal : besides, they are given only in monthly maxima, minima, and means ; and we are left totally in the dark as to the *mode* by which these different results were obtained.” Dr. Burgess, however, settles these preliminary questions with his usual facility, and makes the observations apply to the island of Madeira in general.

It may be said, in answer to this last observation, that the distinction is not material, since invalids reside in or near to Funchal during the winter. To this I have to reply, first, that it is no excuse for Dr. Burgess ; secondly, that the *winter* residences of invalids extend very far beyond the limits to which the meteorological observations in question are applicable, according to the opinions of the authors quoted ; thirdly, that some invalids remain during the summer, and remove to great distances ; fourthly, supposing Dr. Burgess to have incontestably established the non-sanitive effects of the localities to which the meteorological observations are applicable, invalids might take into consideration the expediency of moving to other localities. This last remark may seem rather ludicrous, but it is so only by reason of the absolute absurdity of the supposition upon which it is founded.

Dr. Heineken’s register extends over the period of one year. It contains, with some omissions, daily observations of the barometer, hygrometer, maximum and minimum thermometers, and rain guage ; also the direction of the wind, and remarks on the weather. I need not repeat Dr. Heineken’s statement respecting the little value of his own hygrometrical observations, or respecting the non-applicability of his observations in general to any

* It is scarcely possible that Dr. Heineken can refer to any other set of observations, though he mentions them as having been published by Dr. Gourlay twenty-five, instead of fifteen years previously.

place other than the one in which they were made. I must, however, repeat a challenge to Dr. Burgess to furnish us with some positive data, in order to remove the suspicion which naturally suggests itself in this case also, namely, that the incontestable proof, alleged to be drawn in part from Dr. Heineken's observations, is in fact drawn from no other source than Dr. Burgess' own imagination.

I have already made some remarks respecting the want of knowledge of meteorological science which is displayed in Dr. Burgess's work. I must add a few more words on this head, for there can scarcely be a fairer answer than this is, to an argument professedly founded on meteorological data, and to the conclusion which is announced by Dr. Burgess in such a dictatorial tone. Dr. Burgess copies hygrometric statistics, writes familiarly of *the* hygrometer, and seems to be quite unconscious that his readers cannot possibly guess what species of hygrometer he refers to, and, consequently, cannot understand and appreciate the meaning and force of such statements. Any writer, knowing himself what he means, may now and then fail to inform his readers on some essential point; but one who *habitually* quotes hygrometric statistics, from different authors, old and recent, English and foreign, without regard to such distinctions, gives us a right to infer that he merely copies without understanding. Writing of the climate of Naples, Dr. Burgess informs us that *the* hygrometer "indicates every degree of atmospherical visicular saturation, by running the entire length of the scale in the short period of a single day" (p. 196). It requires some courage to attack such a formidable array of scientific terms as we have here, especially since I must begin by confessing that I am utterly unable to guess what is meant by "every degree of atmospherical visicular saturation"; and that I am equally at a loss to understand what is meant by "the entire length of the scale", for I have yet to learn what are the limits to its length, either natural or conventional.

But it will be safer not to say too much on this point, until Dr. Burgess shall have informed us whether he is writing of Leslie's hygrometer, of Daniells' hygrometer, of the so-called Mason's hygrometer, or of some and what other instrument of this genus; for the attempt to discover what can be the meaning of *the entire length of the scale* of each and every of these instruments is quite bewildering.

Though Dr. Burgess's work contains some statements respecting the requisites of a climate for consumptive invalids, I believe it does not contain so precise a definition, or one so prominently put forward, as that which we find in the review to which I have already referred, and in which the author quotes the summing up of his own views, also already referred to. In this review, Dr. Burgess informs us, "There is no perfect climate—all we hear about 'earthly paradises' and 'heavens upon earth' notwithstanding—for a climate to be perfect in relation to phthisis, should not vary in temperature from day to day throughout the year; and the transition from day to night, as well as from one season to another, should be imperceptible. As a condition of this kind is incompatible with the physical laws to which this planet is amenable, it only remains for the climatologist to ascertain where that climate is to be found which approaches nearest to *equality* of temperature (Dr. Francis says Malaga is the place), for in that quality consists the chief virtue of climate as regards pulmonary complaints. The degree of heat is a very inferior consideration as compared with the range of temperature, and there is no reason why the mild, humid, relaxing atmosphere of Rome should be more efficacious in the treatment of phthisis than the cold, rarefied air of Siberia, if the temperature of the latter were equable" (p. 294). How our climatologist arrives at the conclusion that the *cold* air of Siberia is *rarefied*, we are not informed. But, taking the above to be a correct description of what an "earthly paradise" ought to be, let me ask, how many of the

“positive data”, which Dr. Burgess has laid before his readers, really bear upon the question at issue, otherwise than by virtue of the false colouring which he has given to them? Has not Dr. Burgess kept back the leading facts which do bear on this question? Are not Drs. Gourlay, Heineken, and Mason (to say nothing of Mr. White), unanimous upon this point, namely, the equality of the temperature of Madeira, compared, of course, with other climates; for I quite agree with Dr. Burgess, that no climate is perfectly equable.

After reading Dr. Burgess’s summing up, then his definition of a perfect climate, and lastly, his prefatory promise to furnish the data upon which his conclusions are founded, might we not expect something like an analysis of the thermometric statistics of the three meteorological observers who have incontestably established, as Dr. Burgess alleges, the non-sanative effects of this climate? But Dr. Burgess has not given us a single thermometric statement, either general or particular, bearing on the question of how much the temperature varies from day to day, from day to night, or from one season to another!! On every one of these points Madeira challenges comparison with other climates. Lastly, there is a fallacy in Dr. Burgess’s conclusion, that “it only remains for the climatologist to ascertain where that climate is to be found which approaches nearest to equality of temperature.” For invalids may be in one climate during the summer season and in another during the winter season, and thus escape the extreme heat of one and the extreme cold of the other; and this happens to be exactly the common practice with English invalids who resort to Madeira.

I do not mean to discuss the truth of Dr. Burgess’s definition of a perfect climate; but I must protest against being understood as subscribing to it. I do not admit that absolute equality of temperature is best for all invalids of the class to which he refers, or of any class; for I imagine that invalids in general derive benefit from changes, provided they are not too great. I cannot admit that a

host of other circumstances ought to be so much excluded from consideration as that definition requires. I cannot admit that English consumptive invalids in general would derive as much benefit by removing to a colder climate during the summer as by removing to a warmer climate during the winter. Lastly, I cannot admit that the same climate can be best suited to all constitutions and to all stages of the same disease.

I must now repeat Dr. Burgess's summing up, which deserves to be stereotyped. It will be found at page 204 of his work, as follows :—

“ CONCLUSION.

“ It results from the preceding statements, that much misconception prevails with respect to the efficacy of foreign climates in cases of pulmonary consumption ; and however agreeable to the senses warm air, sunny skies, and luxuriant vegetation, may seem, they afford no proof of salubrity, nor of the beneficial effects of any climate.

“ Madeira, with all its sanitary fame, is no exception to this rule, as the meteorological observations of Drs. Heineken, Gourlay, and Mason, incontestably establish. Malta . . . ”

To this I have only to add my own summing up, which is as follows :—

It appears to be Dr. Burgess's deliberate opinion, that the public and the medical profession are altogether in error on the climate theory, or practice ; that although English invalids and their physicians agree that the former derive material benefit from the climate of Madeira, yet, all are labouring alike under a pure delusion ; and that he, Dr. Burgess, sitting in his study in Half-moon-street, has only to cast his eyes over some columns of old meteorological observations in order to enunciate this incontestable conclusion. It is immaterial that the meteorological observers themselves, all of whom were physicians, and personally acquainted with the climate, differ

in opinion from Dr. Burgess. It is immaterial that the observations were not made at the place in which the deluded invalids happened to reside; and that, in the opinions of the observers themselves, their observations are applicable only to the place in which they were made. It is immaterial that some of the observations were made nearly sixty years ago, and the most recent nearly twenty years ago. It is immaterial that we are left in the dark as to the mode by which stated results were obtained. It is immaterial that the thermometer employed by one observer for registering the temperature in the shade was exposed to the influence of the sun during half the afternoons. It is immaterial that the position of the same observer's hygrometer was, apparently, about equally unsuitable. It is immaterial that we have very slender means of judging of the competency of the two other observers, or of the accuracy of their instruments. It is immaterial that some observations were made with a Daniell's hygrometer, and others with a Mason's hygrometer, that the observer who used the latter instrument did not know how to compare its results with those of the former, and that Dr. Burgess writes as if he were utterly ignorant that there is any essential difference between them. Lastly, it is immaterial that Dr. Burgess reads and copies plain print exactly the reverse of what it expresses, with other variations, according to circumstances. All these preliminary difficulties Dr. Burgess can surmount, and then, as he thinks, arrive at a safe and incontestable conclusion by a mere glance; for, though he professes that no opinion has been hazarded without the support of positive data, yet he has not quoted one single fact from the meteorological tables and registers in question, and no one will imagine that he has really examined them, since to do so would have been obviously, and for several reasons, a mere waste of time on his part.

We have seen Dr. Burgess's definition in which he asserts that, the nearest approach to a perfect climate is that which approaches nearest to *equality* of temperature,

with regard to its variations from day to day, from day to night, and from one season to another ; and in which he treats all other considerations as, comparatively speaking, unimportant. We have seen Dr. Burgess's summing up in which he asserts that, the non-sanative effect of the climate of Madeira is incontestably established by the meteorological observations of Drs. Gourlay, Heineken, and Mason. And we have seen his prefatory assertion that, he has hazarded no opinions without positive data to enable his readers to judge whether his conclusions are warranted by the evidence. Nevertheless, Dr. Burgess's chapter, or section of a chapter, on the climate of Madeira, does not contain one single thermometric statement bearing on the question of how much the temperature varies from day to day, from day to night, or from one season to another.—No.—Not one ! Dr. Burgess has not even given his readers the benefit of the remarks and inferences made by the above-named authors and deduced from their observations, which bear on these points. Scissors and paste could have accomplished that which Dr. Burgess's pen has failed to do. The works of every one of the above-named authors contain unequivocal testimony to the equability of the temperature, and also to the sanative effect of this climate ; every word of which Dr. Burgess has studiously kept back, whilst he has done his best to convey impressions of a directly opposite tendency by means of statements and quotations ; hardly one of which is not a *palpable* misrepresentation of facts ; and not a few are *literally* false, even down to so paltry a thing as a melancholy description of a burying-ground !

Another remarkable feature in Dr. Burgess's work is, that he seems to expect his readers to come to the same conclusion with himself ; and that, too, in spite of the apparent inconsistency between his statements and his summing up ; for after having done his best to vilify the climate of Madeira in every possible way, having extracted "reluctant" admissions from one source, that the climate is not altogether free from changes, which constitute there

as well as elsewhere the exciting causes of pulmonary affections ; having told us that the atmosphere is saturated with moisture during the greater part of the year ; having made Dr. Mason assert that Madeira is no more to be relied on than any other place for certainty of fine weather, that it has *equally its annual variations of temperature* ; and having represented the same author as complaining *bitterly of the cloudy sky, the high winds, and the variability of the climate* ; and, with respect to the luxuriance of the vegetation, having told us only, that gloves and shoes become covered with various species of cryptogamous plants : after this description of the climate of Madeira, our author coolly sums up by announcing that Madeira is an example to the rule, that however *agreeable to the senses warm air, sunny skies, and luxuriant vegetation* may seem, they afford no proof of the salubrity nor of the beneficial effects of any climate ! The author tells us, moreover, that this is the result of his preceding statements ! Does Dr. Burgess mean to admit that, notwithstanding all he has told us to the contrary, Madeira really does rejoice in a warm air, sunny sky, and luxuriant vegetation, calculated at least to charm the senses ? After his prefatory flourish respecting no opinion being hazarded without the support of positive data, what are the facts with respect to Madeira, even upon Dr. Burgess's own representation ? Are we to understand that Madeira is, or is not, warm and sunny ? Are we to understand that mould upon boots is the vegetation referred to, in the author's summing up, as so peculiarly luxuriant and agreeable to the senses ? Lastly, is it a fact, as Dr. Burgess alleges, that the land and sea breezes of this "blessed island" blow, each from one point of the compass only ; and that the salubrity of the island mainly depends upon this strange phenomenon ?

With respect to the luxuriance of the vegetation of Madeira, Dr. Burgess perhaps thinks that, since tradition and romance are on his side of the question, no positive data are required. This, however, is by no means in accordance with my views. So far as my knowledge extends,

there is scarcely a spot to be found where there is moisture sufficient to support luxuriant vegetation, without the assistance of artificial irrigation. It is true that artificial irrigation is carried to a great extent; nevertheless the more general character of the surface of the country is dryness, barrenness, and absence of luxuriant vegetation. Even grass for horses and cows is brought down *daily* from the mountains; and in the summer, even on the mountains, the grass becomes so dry that a spark of fire will endanger the whole district. The whole island is of volcanic origin; its surface is either precipitous, or very much inclined, and the soil is of a porous nature. With the exception of a volcanic crater, and one or two other spots at distant parts of the island, none of which have I ever seen, I believe there are no hollows or basins capable of retaining water; and those to which I allude as the exceptions, do so only for limited periods. I have never seen a lake or even a pond. There are some yam-grounds which, I should suppose, must be injurious to the health of those persons who live on or close to them; but they are quite unworthy of further notice in this place.

But, supposing, for the sake of the argument, that we are now in possession of all the requisite meteorological data, Dr. Burgess's incontestable conclusion still depends upon his definition of what a perfect climate ought to be, and that rests upon his own bare conjecture, unsupported by any "positive data" whatever, notwithstanding his prefatory promises on this head. Now if Dr. Burgess were to set to work, and honestly endeavour to find positive data upon which to found this one essential link in the chain of his argument, what would he do? He would naturally begin by inquiring what climates are found, practically speaking, to produce the best effects. In investigating this question Madeira could not be overlooked, or put aside. He must inquire what effects, practically speaking, this climate actually has upon invalids. *Now, if Dr. Burgess had begun with this question, it is obvious, that his very first step would have concluded the whole ar-*

gument! And Dr. Burgess need have gone no further than Sir James Clarke's well-known work, in order to find the subject of the climate of Madeira entered upon, discussed, and disposed of, in a very few pages, much more to the purpose than in his own work, either with or without my elucidations.

Supposing Dr. Burgess to have begun at the right end of the argument, and to have arrived at its conclusion by mastering the first step, and supposing, simply for the sake of an example, that the conclusion is favorable to Madeira; then, if he thought it worth while to proceed beyond the real practical question, he might, as a second step, infer the following proposition,—either the air of Madeira is dry, or a dry air is not essential; and similarly of other disputed and disputable points. And if he had set himself to work to investigate such questions, he would, in my opinion, have set out in the legitimate paths of medico-meteorological science; though he must have laboured long before he could have distinguished himself so effectually as he has done by following the bent of his own genius.

It is difficult to be certain of one's own motives; but, I may safely say, my motives for writing this letter do not spring from any ill feelings toward Dr. Burgess personally. He is a total stranger to me. I first became acquainted with his name as the author of the work which I have criticised, and I know him only by what he has written there and elsewhere. My principal object is to undeceive those persons who have no suspicion that a work, on a subject of such vital importance, sanctioned by the name and title of an English physician, can be so utterly untruthful and unscientific. By such means the ignorant and the weak are of course easily misled; but even well-informed persons read such works without giving themselves the trouble to sift the arguments; and though they may not be fully convinced, yet they too often allow their opinions to be influenced. I resorted to Madeira for the

benefit of my health, and have continued to reside there with no other object. If I have any selfish interest in its sanatory fame, it is, certainly, to decry it; with a view to the reduction of house-rent and housekeeping expenses, which have been greatly raised by the influx¹ of English visitors.

We have a right to expect that alleged quotations shall be true so far as they go: but it is contrary to experience to assume that authors in general quote fairly as against themselves. It is extremely difficult, if not impossible, to epitomise with perfect fairness; and it is but natural that one should be a little blind to the force of arguments which are opposed to one's own views. If, unfortunately, I have made any important slips of this nature, they will most fairly expose me to criticism and correction; but not to a charge of dishonesty, unless by their nature, or by their frequent repetition, they sustain the charge of wilfulness. As I claim it for myself, so I would allow to Dr. Burgess the full benefit of these last remarks; and my readers will form their own opinions of the character of Dr. Burgess's repeated misrepresentations, and whether they call for criticism and correction alone.

The question of climate for invalids is a very complicated one, which I cannot undertake to unravel. I may, however, state my opinion, that an invalid should regard his removal to a more suitable climate as simply placing him in more favourable circumstances. Some unfortunate invalids may be so far beyond human aid, as to derive no material benefit from such a change. Others may succeed in materially prolonging their lives, and alleviating their suffering. And still a third class will find that the turning-point between gradually declining and gradually recovering, depends upon this one additional favourable circumstance. Let those invalids who would be of this last class, if they have it in their power, procure for themselves this important advantage BEFORE IT IS TOO LATE. Let them take the best practical medical advice within

their power on this point (the best is but fallible). And let them not trust too much to climate alone, but place themselves also under safe medical advisers—a most important point, for the decision of which I must leave them to their own discretion.

Yours very sincerely,

J. M. BLOXAM.

